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GENERAL DRAGOMIROFF, AND HIS VIEWS ON THE ART OF WAR.[1]

INTRODUCTION.

AMONG the most prominent and able of the imperial Russian general officers of the present day must undoubtedly be rated the subject of our sketch, General Dragomiroff. It is very generally believed by the world at large that, in the event of a great war, such as the Russian armies may be called upon to carry on against the royal and imperial army of Austro-Hungary and the allied, but independently fighting, German army, the Russian Northern Army will be commanded by General Gurko, and the Russian Southern Army by General Dragomiroff. We are not here concerned with discussing the question as to whether or not it is at all probable that such a war will shortly come, nor the question as to when (if at all) it is likely to take place; nevertheless, the fact must be admitted that beyond the Niemen it is a settled conviction that, in such an event, both the above-mentioned generals are the already chosen commanders-in-chief of the Russian armies, and we must make our further calculations on that basis. If this be true, however, it would certainly be well for us to obtain a clear conception of such a nature, such a personality,—one who is to play the part of leader at the head of the Southern Army in front of the lines of Austro-Hungary,—and endeavor to fathom his character.

[1] Translated from *Nord und Süd* (Breslau), February, 1894, by permission of the publishers and of the author, Gebhard Zernin, editor of the *Allgemeine Militär-Zeitung*, Darmstadt, Germany, and captain *à la suite* of the infantry.

This is, indeed, the task which we have set for ourselves here: we will attempt, from the facts which have become known to us and the materials which have come into our possession, and which were acquired not without considerable trouble, to paint the character of General Dragomiroff.

This work we propose to carry out under three heads, the first comprising *the personality of General Dragomiroff, with a sketch of his life and services*, while the second section will treat of the general as *military writer on the campaign of 1866*, and the third and last will present *Dragomiroff's views on subjects related to the art of war.*

I.

THE PERSONALITY OF GENERAL DRAGOMIROFF, WITH A SKETCH OF HIS LIFE AND SERVICES.

Michael Iwanowitsh Dragomirow is by birth a Russian. He was born in 1831, is at present sixty-two years old, some three years younger, therefore, than his comrade Gurko, but physically not particularly strong. Two causes, mainly, have acted to bring about this last-mentioned condition: in the first place, a severe wound in the right leg, received in the Turkish campaign of 1877 (in the Shipka Pass), resulted in great bodily infirmity and helplessness, so that even at this day the general can mount a horse only with great difficulty; in the second place, the excessive exertions which General Dragomiroff, like so many of his Russian brothers in arms, underwent in the above-mentioned war had an injurious effect on his constitution, which effect, however, must not be overrated. He is, on the whole, physically sound and hardened, in spite of the fact that he has not acquired distinction nor gained his reputation in service with troops, but has, on the contrary, passed the greater part of his past term of service at the office desk or in the lecture-room.

Dragomiroff received an excellent military training and entered on general staff duty very early. He passed several years on this duty, in which he rose step by step and received positions more and more important and responsible. At the completion of his course at the General Staff School he was presented with the large gold medal, which is so uncommon that not more than two or three other officers besides himself in the entire Russian army possess it. He combines a clear understanding with a strong character; his diligence and application were wonderful, so much so, indeed, that he had early acquired a rich mass of knowledge and information. He soon had the reputation of being one of the best-informed officers, and even as captain he was selected to conduct the lectures in minor tactics at the Nicolas Academy.

In his service with troops Dragomiroff filled several positions in the

general staff; for instance, he was at an early day chief of the general staff of the military district of Kiew, the commanding general of which he is to-day. In 1866—when he was thirty-five years of age, therefore—he was promoted to the grade of colonel, being on duty at the time as instructor at the Nicolas Academy in St. Petersburg. During the summer of that year he enjoyed the privilege of being ordered to the Prussian general head-quarters as representative of the Russian military authorities, to observe the operations during the Austro-Prussian war, which had just broken out. What he had opportunity to learn in this position is the subject-matter of the second section of our essay. Soon after his return home he published an account of the campaign, together with his observations during its progress, which attracted much attention at home and abroad, and which had two separate translations into German.

One peculiar consequence of the personal part he took in the Austro-Prussian war of 1866 was that Dragomiroff acquired a strongly-marked habit not only of underrating the imperial army under the black-and-yellow flag, but also of giving a not always correct or fair estimation of the Prussian or the later German army. In this respect his judgment appears to have been influenced by the natural characteristics and prejudices of the national Russians, quite as strongly as has been the case with other prominent Russian generals, for example, Gurko, and more particularly, Skobeleff. At the same time it will certainly be of interest, and possibly may even be of value, to investigate and see what characteristics in the two armies Dragomiroff considers as worthy of praise or blame.

Both in the Austro-Hungarian and in the Prusso-German armies the Russian general finds as a principal fault the fact that both are dominated by a too inflexible adherence to *form*, so much so that the free, untrammeled military *spirit* of the individual appears to suffer under it. He considers this to be a result of the military systems of training and instruction developed in a purely theoretical way in Vienna and Berlin, and which have not advanced and improved with the times. According to his view the result of a campaign, a battle, or a combat, is entirely dependent on the spirit, the self-consciousness of the fighting troops,—that of the individual as well as that of the mass,—and this feeling appears to him to be inadequately developed in the two above-mentioned armies. In his own, the Russian army, however, he finds this feeling sufficiently well marked; moreover, he thinks it exists also in the *nouvelle armée de la France*, the French republican army of to-day.

It appears to us unnecessary to enter any further into the discussion of these assertions in this connection. To state them clearly and accurately will be sufficient for the present; evidently prejudices are involved, which can hardly be overlooked. With all due respect to

the weight and significance of a Dragomiroffic opinion, we beg to be permitted to call attention to the fact that other authorities of scarcely less weight—as, for example, quite recently, the military correspondent of the London *Times*—have acknowledged and recognized in the German troops, during the grand manœuvres of 1893, the existence to a marked degree of this freedom of thought and action in the individual man.

Let us return, however, to Colonel Dragomiroff, who, at the close of the campaign of 1866, went back to his home. During the eleven years following he passed through the several grades to the rank of lieutenant-general, and on the outbreak of the Turko-Russian campaign, in the spring of 1877, he entered the field at the head of the Fourteenth Division. He enjoyed the special favor of the Russian commander-in-chief, the Archduke *Nikolas Nikolajewitsh*, who is said to have confided to him alone his intention to cross the Danube at Zimnitza. On the 26th of June, 1877, in the evening, at half-past nine, General Dragomiroff began the crossing at that point, with sixteen battalions, six squadrons, sixteen guns, and four half-battalions of pioneers, who carried along with them four hundred and eight sections of pontoon; he effected the passage over the broad expanse of the Danube, took up the contest with the Turks on the right bank, which for a time—on the morning of the 27th of June—looked very dubious for the ultimate success of his arms, and at two o'clock took possession of the height of Sistova, thus securing the passage of the river to the Russian army. The most formidable river obstacle in Europe was thus first crossed by Dragomiroff in 1877!

It is, indeed, very probable that had the general remained in the vicinity of the Russian commander-in-chief and retained his confidence, he would have exerted a considerable and probably a very beneficial influence on the progress of the Russian military operations. But alas, his activity soon received a check: at the very opening of the battles in the Shipka Pass he received a severe wound in the right leg, was compelled, in consequence, to leave the scene of operations, and returned to his home. In regard to the few weeks during which he commanded his division in the field, it can only be said that he conducted himself personally with bravery and showed great scope and compass in his knowledge of troop leading; but the possession of an extensive war experience, considering the short time he was actually in the field, can hardly be claimed for him; however, it does not follow from this that he must be regarded as not possessing the information resulting from such experience.

In the years immediately succeeding, Dragomiroff often came into prominent notice in the Russian army. His name was that most commonly associated with those of Gurko and Skobeleff, especially when any question of proposed changes and improvements in the Russian army came up for consideration. At nearly all the larger manœuvres

of the troops at the camp of instruction of Krassnoe Selo he was selected to act as deciding judge, and by this means it came about that his views were regarded as decisive, and no one dared to gainsay his judgment or question his expressed opinion. This phenomenon finds its natural explanation in a very remarkable fact. General Dragomiroff passes as the "Russian Moltke," just as General Miribel passed as the "French Moltke." The long term of service of Dragomiroff as director of the War Academy of St. Petersburg has resulted in the entire Russian general staff corps—up to about the grade of colonel—being instructed by him, and passing through his hands. That thereby the influence of the general over the officers of this the *élite* corps has become very powerful, and his military views have received widespread attention, will be evident to any one who very properly does not regard the expression *jurare ad verba magistri* as a mere phrase. In this way it has come about that at present among many Russian commanders, and, indeed, all general staff officers,—who must, of course, be regarded as the proper agents for the execution of the orders of the commanders,—there reigns a remarkable concurrence and unanimity of opinion in military views and fundamental principles, a state of affairs which must result in great advantage to the army.

Another point, and a phenomenon related to it, must be brought out in this connection,—namely, the political tendency of General Dragomiroff and its influence on his subordinates. The general has a decided national feeling; he is imbued with a deep hatred of the Germans, belongs to the most intense adherents of the pan-slavists, and encourages and promotes the cause of the war party from his innermost soul. Along with General Obrutsheff, he belongs to that powerful and influential pan-slavistic group which, first and foremost, to the exclusion of all else, serves its country, the Czar entering only as a secondary consideration. It is certainly possible, and not at all improbable, that General Dragomiroff, together with many other generals and their numerous followers, in case the Emperor Alexander III., in the beginning of a campaign, should be unfortunate in a number of battles waged with an enemy of the country, would desert the Czar. Therefore, it may be stated as a fact, without any exaggeration, that the Russian general staff, trained as it has been and influenced as it is by General Dragomiroff, will in the day of misfortune be a threatening danger to the house of Romanoff. In this respect the spirit of the Russian officers resembles somewhat that of the French, whose tendency to vacillation—particularly at the time of the first and second empires—history has proved.

It has been openly asserted that the Emperor Alexander III.—perhaps quite unconsciously—has a strong dislike for persons occupying high positions in his army who have such political tendencies. It has been noticed, for instance,—and no attempt has been made to con-

ceal the fact,—that he never admits General Obrutsheff—although the latter has frequently and for long periods at a time taken the place of the Minister-of-War Wannowski—to a personal interview, and in like manner he takes care to keep General Dragomiroff at a distance. On the other hand, the monarch knows too well the great value and important services of these two generals, not to recognize them in a degree; perhaps he fears their influence and following, and therefore does not desire to come too near to them. A more exact estimate of these relations it is impossible to give, as it is beyond the reach of our knowledge.

Another peculiar side to the character of General Dragomiroff is worthy of notice, and cannot, indeed, be passed over in this connection, and that is the affection towards himself which he has inspired in the younger Russian officers. The general is a very entertaining story-teller and fond of young people; moreover, he enjoys a jolly good-fellowship among his comrades. Even as division commander he is said to have associated, when off duty, much more than is ordinarily the custom, with the youngest lieutenants of his division; he made intimate comrades and boon companions of many of them, and is said even to have gone so far as to exchange with them opinions reflecting on the conduct of their superiors, not to mention expressions of deep contempt for them. This tendency towards individual freedom, so strongly developed in General Dragomiroff, as we pointed out above, also led the general to object to permitting any subordination of the younger officers to the older ones when off duty. As director of the War Academy in St. Petersburg he advocated the same principles.

That such meetings of jolly good fellows are not usually dry affairs is quite well known. Wherever officers pass several hours at a time in one anothers' company, it is customary with them—as it is in all civilian circles of the same kind—to resort to the practice of wetting whistles, a mode of entertainment which is easily carried to excess. Although this has much less significance in Russia than elsewhere,[2] the custom must still be regarded as producing a dark side of widespread effect in the life of her officers, inasmuch as the military character and reputation of individuals, it must be admitted, is thereby often permanently influenced and affected to their detriment. We

[2] No less a person than Field-Marshal Count Moltke, more than forty years ago, called our attention to this point. In his letters from Russia (Berlin, 1877), written in 1856, he writes (page 148) as follows:

"Should the European soldier ever see his non-commissioned officer drunk, discipline would be at an end. The Russian soldier, on the contrary, puts him to bed, washes him, and obeys him again next morning, after he has slept it off, with the same faith and fidelity as before. . . .

"He probably thinks that he withholds from him what is his due and feels that he is abused by him when in anger, *but he likes him, for all that, much better than he does the German, who disciplines justly and conscientiously.* . . ."

wish to reiterate, therefore, in this connection, that the effect of this weakness cannot be over-estimated.

Such is the character of the general who, when the trumpet of war shall summon the troops to the field, is destined to lead his hosts into the field of the enemy's fire; assuredly will he endeavor to do this duty, fully conscious of its object and importance, with decision, in a brave spirit, and with all his energy.

II.

GENERAL DRAGOMIROFF AS MILITARY CRITIC ON THE CAMPAIGN OF 1866.

The particular reasons which, in the spring of 1866, determined the sending of the then Colonel Dragomiroff to the Prussian army, in order that he might take part in the campaign then opening against the Austrian army, are not known to us. But we will not be far wrong if we assume that it was the Russian military head-quarters itself which desired direct information from some of the higher officers of its own army on the progress of the operations and the separate events of the war then opening, such information being necessarily highly desirable to every military state. That the choice fell on Colonel Dragomiroff may possibly be explained by the circumstance that he was instructor of strategy and tactics at the Nicolas Military Academy, where he delivered lectures on military history relating to all the different periods. As the outbreak of war became more and more probable, he left St. Petersburg and presented himself in Berlin in June, 1866, upon which, if we are correctly informed, he was assigned to the head-quarters of the Second Army, then effecting its concentration in Silesia, and attached to the command of the then Crown Prince of Prussia. Another Russian officer, of higher rank, Major-General Count Kutusoff, followed the campaign of 1866 at the head-quarters of King William.

Colonel Dragomiroff consequently accompanied the troops during the seven weeks' campaign in Bohemia and Moravia as one of its keenest and most intelligent observers and spectators. He collected carefully all the notices relating to the composition and character of the two opposing armies which he could obtain; he had especial opportunity to become intimately acquainted with the views and opinions of two officers of the Prussian general staff, prominent even at that early day, which they expressed very freely on the state of the military operations. These were Major-General von Blumenthal, chief of the general staff of the Crown Prince's army, and Major Verdy du Vernois, the senior general staff officer (other than the chief) on that staff. Moreover, he had frequent opportunity to exchange views and opinions with Colonel von Wittich, chief of the general staff of the Fifth Corps, commanded by General von Steinmetz, and as this

army corps, as is well known, was so fortunate as to open so gloriously the campaign of the Second Army with the three battles of Nachod, Skalitz, and Schweinschädel, following one another in rapid succession on the 27th, 28th, and 29th of June, such a personal experience must have been for the well informed as well as ambitious and energetic Russian staff officer extremely instructive. We will see directly how well he understood how to take advantage of the favorable opportunities thus presented to him.

Soon after the end of the campaign and his return home Colonel Dragomiroff collected the results of his observations and experiences in a separate volume, which was completed in the year 1867, and then appeared in print. It attracted so much attention that two German translations of it appeared in Berlin, one sanctioned by the author, the other—somewhat abbreviated—not.[3] Since these pages constitute the fruit of Dragomiroff's studies on the theatre of war in 1866, we will consider their contents somewhat more closely.

The book is divided into ten sections. The subject-matter of them comprises: the two opposed armies, their strength and positions; the plans of campaign of the two armies and the military operations; and, finally, the actual collisions of the troops. The author has not given a precise description of the separate battles and combats, but merely a general outline, so that criticism is the predominant feature. In this connection there is one fact that stands out prominently: a certain severity, often quite unsparing, in his judgment on and valuation of the imperial army, whereas, on the other hand, the better condition of affairs on the Prussian side occasionally receives a very favorable recognition, and only a few imperfections therein are pointed out.

So much in general terms, but let us now look more closely at the details.

In the first section Colonel Dragomiroff explains the political causes of the war, and enters into the presentation of the diplomatic campaign up to the opening of the German-Danish war of 1864. He then passes to a comparison of the two armies, not only in regard to their relative strength in number of combatants, but also as regards their intrinsic qualities. The following praise, certainly well and honorably deserved, he accords the Prussian army:

"A deep sense of duty, and a readiness to fulfill all the requirements of the service to the smallest details, constitute the distinguishing characteristics of the Prussian army, and this is true of all, from

[3] The exact titles of these two works are as follows: 1. Abriss des Oesterrichisch-Preussischen Krieges im Jahre 1866, von M. Dragomiroff, Oberst, etc. Vom Verfasser autorisirte Uebersetzung. Berlin, 1868, A. Bath, 8, 274 S. 2. Skizze des Oesterreichisch-Preussischen Krieges im Jahre 1866, zusammengestellt von Dragomiroff, Oberst, etc. Berlin, 1868, Heinicke, 8, iv u. 168 S.

The last named edition appears to have been published entirely without the knowledge of the Russian author.

the lowest grades of the military hierarchy to the highest." To-day the general would probably express the opinion that it is precisely the existence and observance of these "smallest details," which appear to him in no way necessary, but rather a disadvantage.

Upon the Austrian army, on the contrary, we read the following harsh judgment:

". . . Is it possible, under such circumstances, that a feeling of the obligations of duty should take root? No, it is practically impossible in an army where all is based on caprice, nothing on laws.

"Is pride in his profession possible? No; it is impossible in a country where a man is laughed at for devoting his life to it.

"Is the full development of the art of quickness of perception and keenness of penetration, or of the spirit of initiative and enterprise, possible? Neither is to be thought of among a people where it is occasionally far more advantageous to be defeated in the execution of an order than to be victorious in the violation of one."

It may be said to-day that the author here bestows bitter and unjust blame, a fact the explanation of which can only be surmised, or at most be insufficient and incomplete. The Russian staff officer shows in such expressions a preconceived prejudice against the Austro-Hungarian army, due to which it is hardly possible that we may expect from him a free, unprejudiced opinion, and which may perhaps be traced back to the political feeling which overcomes the *national* Russians, when they recollect the bearing of the Austrian empire towards the realm of the Czar during the Crimean War.

Further on, in another section of Dragomiroff's book, we find a very interesting characterization of the personalities of the men directing the operations on both sides. The highest encomiums are bestowed on the military qualifications of the commander-in-chief of the First Army, Prince Frederick Charles, and his qualities as a troop leader; and this praise is extended to the tactical memoir written by the latter, which is further subjected to a careful examination and criticism.

We will not enter into this subject more closely in this connection, but we would like to call attention to one point, which is still of great interest to-day,—namely, the question as to whether a body of troops, which has been engaged in battle and exhausted in strength and vitality to the last lingering spark, can immediately thereafter—even on the same day of battle—be again led into action. Colonel Dragomiroff, during a conversation with General von Steinmetz, also asked the latter the following question: "Have you never been in a position where it became necessary to relieve certain subdivisions in battle?"

"What do you mean?—how *relieve* them?" was the general's answer, in a tone much as if I had spoken in an unknown tongue.

"To replace them by new ones, in case they have fallen into disorder!"

"No," was the answer; "every subdivision of troops once brought under fire must remain there to the end of the engagement."

The memoir of Prince Frederick Charles advances the same ideas; it could hardly advance any others.

The leader of the Austrian Northern Army, Field-Marshal Benedek, receives the following criticism at the hands of Colonel Dragomiroff:

"His personal energy is undoubted and beyond reproach. He cannot be replaced where it is a question of leading troops into action for the purpose of reaching a certain objective point, but he is hardly capable of setting for himself such an object. In a word: Benedek is an excellent tactician, but no strategist. It was against his will that he went to Bohemia, for he was not acquainted, as he said, either with the field of operations or the enemy with whom he was to wage battle. This leads to the suspicion that Benedek lacked the theoretical preparation requisite for the profession of arms; his strength lay in practical routine work, proficiency in which he had acquired on the Italian theatre of war. Had this campaign been fought on that field, he probably would have again proved himself a brilliant officer."

Field-Marshal Benedek and Archduke Albert have both left us tactical memoirs on the campaign of 1866. In regard to these Colonel Dragomiroff pronounces the opinion that those of the first-named military leader are too diffuse, do not distinguish the important from the unimportant, and contain too much theory and pedantry; while the memoir of Archduke Albert is placed equal to that of Prince Frederick Charles.

Now, as regards the gist of the work, the critical comments on the entire campaign of 1866, a few prominent points will bear bringing out. The First Prussian Army is blamed for requiring, in the concentration in Bohemia, fully five days' time to make the twelve-hour distance from Reichenberg to Gitschin. "This loss of time"—so we read —"led to the result that Clam Gallas arrived in Gitschin before the Prussians, and thereby re-established his direct connection with Benedek; the Prussians, therefore, had to take Gitschin by force on the 29th of June, whereas on the evening before they might have occupied it without firing a shot. If the objection be made that it was necessary to connect with Herwarth (of the Army of the Elbe), then it may be stated that Clam Gallas would never have thought of making a stand at Münchengrätz, had he known Gitschin in his rear to be occupied by superior forces."

The battle of Königgrätz is discussed from various points of view. At the end of the discussion the author makes the following remarks:

"After the devastation of the Napoleonic epoch this was the greatest both as regards good combination and results. In its form it recalls Bautzen and Waterloo, in its results, however, the latter; for, leaving

out of consideration the differences in other respects, the tendency to rapid demoralization among the Austrian troops of 1866 was the same (?) in character as that of the French troops of 1815, although it did not, of course, arise from the same causes.

"Even if we accord the Prussians full credit for their ability to utilize favorable accidents, not exactly in consequence of the power of clear perception, but rather on account of their energy and daring, it is still impossible to overlook the fact that in this battle, and indeed throughout the entire campaign, their good fortune was such as seldom falls to the lot of the most victorious armies led by the most successful generals. On the road from Königinhof not only to meet no armed obstacle to interfere with the movement, not even hostile patrols,—to find the key to the enemy's position exposed only at the very moment of approaching it, no sooner and no later,—and in consequence of all this to be able to press forward unimpeded to the rear of the enemy's firing line, almost up to his reserves: such success no amount of art can accomplish of itself, did not Fortune, in the shape of the adversary's measures and dispositions, come to its assistance."

We can agree fully with the author that, especially in the advance of the Second Army against the key-point of the Austrian position—Chlum—several very fortunate circumstances aided the Prussians, which helped to determine the results of the entire day. Nevertheless, one cannot help, from the statement of his final verdict on the battle of Königgrätz, being imbued with the feeling that he regards the fortunate termination of this decisive battle as undeserved and that he does not willingly grant the Prussian army that great victory. He denies to the Prussians the gift of clear perception and grants them only the quality of daring, as we have seen. But, of course, this is to be expected from a national Russian, and his view cannot but be prejudiced.

However, there is one point on which we presume to differ with him very decidedly, and that is the assumption that it was exclusively "fortunate circumstances" that brought about the successful issue of the battle of the 3d of July, 1866. This assumption is contradicted by the fixed and settled plan of the night before the 3d of July, for opening the battle, and also by the unshaken faith of the first military adviser of King William, the then general of infantry, Freiher von Moltke, in the result of the measures he had taken and which were being executed. In support of our view, we cite here the simple and natural description of the critical moment of the battle, about midnight, which was so recently transmitted to us in the literary memoirs of the late chief of the general staff of the army.

There we find the following:

". . . The battle had come to a stand-still. In the centre the First Army was still fighting among the villages on the Bistritz, the

cavalry could not push forward, the artillery could find no positions suitable for coming into battery. The troops had been standing for five hours under the brisk fire of the enemy, and that without food, for there was no time or opportunity for cooking.

"Some doubt had arisen in the minds of many as to the issue of the battle, possibly even in that of Count Bismarck when he offered me his cigar-case. (As I afterwards learned, he regarded it as a good omen that of the two cigars in the case, I calmly took the better.)

"The king asked me about this time what I thought of the progress of the battle. I replied, '*Your Majesty will win to-day, not only the battle, but the campaign.*'"[4]

Moltke's decided words, "It could not have been otherwise," which he added to this assertion, every one who studies unprejudiced the plan adopted for the battle of Königgrätz, and compares it with the actual progress of events, must admit to be true; for—as Moltke says in continuation—"we had the superiority of numbers, an advantage not to be under-estimated in war, and then, too, our Second Army had to appear sooner or later on the flank and rear of the Austrians."

Herewith we conclude the section which we have devoted to that part of the subject in which we have attempted to estimate the Russian general as a military writer on the campaign of 1866.

III.

GENERAL DRAGOMIROFF'S VIEWS ON HAND-ARMS.

The editor of the *Ratshviedshik*,[5] which is issued in St. Petersburg, undertook to question General Dragomiroff as to his views on the significance of the different hand-arms. He received an answer, which he published in his paper, and which is here reproduced from the French translation, in No. 49 of the *Revue du cercle militaire* of 1890.

"Although he begins"—so says the French translator—"by assuring his questioner that he has nothing new to say on a subject so often discussed, and that he proposes only to repeat the observations he made some time ago, but which have been forgotten, this remarkable Russian general nevertheless discusses the question in a manner so characteristic and new that it acquires a deep interest. The reader can decide for himself.

"I. The various types of hand-arms may be divided into two groups, similar to those of fire-arms. On the one hand, we have the

[4] Compare "History of the Franco-German War of 1870 to 1871," by Count Helmuth von Moltke, field-marshal-general. Berlin, 1891, E. S. Mittler & Son. Appendix: On the so-called councils of war in the wars of King William I. (p. 428 of the edition in the orignal.)

[5] "The Éclaireur," a Russian military journal of comparatively recent date, which was originally only a bookseller's pamphlet, but which is gaining daily in circulation and interest, and deserves, therefore, to be more generally known.

thrusting weapons, corresponding to fire-arms with a flat trajectory; on the other hand, the cutting weapons, corresponding to fire-arms with a curved trajectory.

"There is no third group in this classification, and there can be none. The reason for this is evident.

"Man does not make anything that is not modeled after, or in some way similar to, himself. Now, his natural weapon is the fist, with which he can either strike from above almost directly downward, or thrust forward straight to his front.

"In all the various types of hand-arms, without exception, we have applications of the same principles as are present in this double character of the fist regarded as a weapon of war, but, of course, they are all of far greater efficiency. In order to strike down an adversary with a blow of the fist one must be very strong, and have a good position to strike from, whereas with a dagger, for example, a child may kill the strongest man.

"II. The improvements made on the 'fist' as a weapon of war are well known to every one.

"Of the two groups above referred to, the former, to which belong the war club and the sling, and their futher developments into the shashka,[6] the yatagan, and the battle-ax, represents the improvements of the fist in its use as a weapon for striking from above downward.

"The latter group, represented by the pike, the lance, the straight sword (pallasch[7]), the bayonet, and the dagger, constitute the improvements on the fist in its use as a weapon for striking straight out.

"The forms and dimensions of hand-arms—just as is the case with fire-arms—have been very numerous and varied, with a view to attaining the various results desired. And yet, just in places where these hand-arms receive the most constant and effective application—as, for instance, in the Caucasus in the combats between the natives of the mountains and the Cossacks—a remarkable simplicity in this regard has been reached: there they have of the first type the shashka, of the other, the dagger, and that is all.

"Endless were the discussions, first on the superiority of the thrusting over the cutting weapons, and the reverse, then on the relations of their dimensions and the most advantageous forms of blades, hilts, etc. These were all a waste of energy, for they took place between persons who, during their entire lives, only carried such blades at the side, where they remained unused and were never sharpened, frequently were not even made of steel, and which not only had never left their scabbards, but were often fastened in them.

[6] The shashka is the sabre of the Cossacks, a strongly curved weapon, which is at present carried only in the Russian army.

[7] The pallasch is the straight sword of the cuirassiers, called by the French, *la latte*.

"III. How can such discussions be explained? Always by one and the same cause,—namely this, that we prefer the fancies of our imagination to the pure and simple study of a question, a study carried on without any sophistry, and without any presumption on our part to long to discover something new, something not yet known to man. The desire to appear remarkable—let us speak freely—to command admiration, explains the origin of many a piece of foolishness. This desire may be allowed to pass when these foolish tricks do not appear as direct attacks, when a man, in order to give himself airs, merely fires a petard which after bursting entirely disappears. But, unfortunately, in these cases too much is generally done; there is a continual beating away at the big bass drum.

"Let us see now what foundation there is for such a discussion.

"IV. *Which arm is the better: the cutting or the thrusting weapon?*

"If we call to mind once more the character of the fist as a weapon we will see that the study of this question involves the solution of the following problem: which is the best way to give a blow with the dagger: from below upward or straight out to the front?

"Evidently this will depend on the circumstances under which one fights, and the peculiarities of the persons with whom one fights, as well as on the method of fighting to which one is most accustomed. The moment one can choose between two modes of fighting, they must be regarded as of equal value, within the limits drawn by the consideration as to whether one is more accustomed to use the one or the other. This usage will be my personal usage in case of a single combat in which I am concerned; but it will be that of the troops to which I belong, in case of letting a body of troops fight out a combat.

"The advocates of thrusting weapons cry out the Napoleonic saying: '*Thrust, always thrust; never strike!*' Napoleon recommended this to the French, it must be remembered, among whom, thanks to the authorized mode of dueling with swords,[8] a knowledge of fencing is wide-spread, and forms, although not a national, still a military usage.

"Had Napoleon turned to us Russians, it is quite probable that he would have said, on the contrary, '*Strike, always strike; never thrust!*' in consequence of the fact that with us the art of fencing is little known, with the exception, perhaps, of a few workmen and citizens, who belong to the more or less prosperous class.

"If we look at it from this point of view every one will agree with me that all deductions on this subject, based on the theory that the thrust requires the more skill, the blow, the more strength, and

[8] This only applies to the men, not to the officers. Pistol duels were forbidden, for when a pistol is used even a coward may fight, whereas at sword's length he can hardly withdraw from the affair. In this way duels in France became an element in training.

such like absurdities, have no more value than an 'empty egg.' That is at least my humble opinion, and one which no one else is compelled to adopt.

"'But,' it will be said, 'if that is the case, we must give the infantry a cutting weapon too. Yet in no European army is it at present provided with one.' Of the infantry I will speak later. Just now we will discuss the question of hand-arms only so far as it relates to the cavalry, as this is the most important representative in the use of this weapon, possessing, so to speak, exclusively the power to fight the enemy directly,—that is to say, in the first place by its own mass, then by surrounding him with the remainder, and in the hand-to-hand conflict by falling upon him with the hand-arm.

"The question, then, as to whether in the cavalry the thrusting or cutting weapon is to be preferred, must be decided, in the first place, by the national usages of the peoples in question; in the second place, by the example of individuals who actually use them, and not by those who handle them merely as parade implements. As experts of the first rank I regard our former Caucasian mountaineers and the Cossacks of the Caucasus, their excellent pupils. The armament of both these peoples is marked, as I stated above, by a remarkable simplicity: the *shashka*, a light and extremely convenient sabre, and the *kinjal* (or dagger). The latter is used only on foot and at home.

"V. *Form and dimensions of the arm.*—The question of form naturally concerns only the cutting weapon. Indeed, it is to a certain degree idle to discuss it at all, or at least of no great moment. To be convinced of this it is sufficient to compare the curvature of the yatagan with the less decided curvature of the shashka.[9] Yet no Cossack would probably exchange his shashka for a yatagan, nor would any Turk give up his yatagan for a shashka, because that is all a matter of usage.

"Much more important is the question of the relative dimensions of a weapon, not so much in itself, as because it leads many people oftener and more readily than any other question into foolish statements. Naturally this subject is particularly important in connection with thrusting weapons.

"It would appear at first sight that a weapon is the better the longer it is.[10] But this opinion is based on the first superficial impression, which is instilled in man by the instinct of self-preservation.

"No matter how short a time we devote to the consideration of this matter, we cannot help concluding as follows, and saying to ourselves:

[9] According to this statement it appears that General Dragomiroff does not mean by yatagan the weapon generally so called, but one of much greater curvature, usually called the Turkish sabre. It is the latter only that can be said to be more decidedly curved than the shashka.

[10] Understanding this to mean, of course, within the limits of convenient handling and the strength of the soldier.

'Yes, but if I can reach my enemy from a greater distance with a longer lance, he will not be such a fool as not to strive to procure for himself the same advantage; in consequence of which there will soon be an equality established, even under the most favorable circumstances, since the conditions on the two sides are the same.'

"However, as a matter of fact, no equality will ever be reached, under such circumstances, for the experience of centuries teaches that he who loads himself down with such a weight is in the end invariably unmercifully beaten.

"The evidence on this point goes back to the history of the Romans, who were armed with comparatively short swords, and nevertheless, in all their battles with them, defeated the Greeks, whose first eight ranks were provided with such long spears that those of the eighth rank had to be over eight archines[11] (six and two-ninths yards) long, in order to reach beyond the men of the first rank. What could be more threatening, or appear more difficult to overcome, than the possession in one's front of a whole forest of spears eight ranks deep! And yet, fearful as this obstacle was, it did not hold back the Romans, nay, the Greeks were even put to flight.

"How can this result be explained? Very simply by the fact that the Greeks were incommoded by their arms, and did not venture to attack in advancing, while the Romans did not accept the report that their enemies were so very much to be feared. They put them to the test,—that is to say, they threw themselves with impetuosity against this wall, made breaches in it at various points, closed with the spearmen at sword's length, and used them up very effectually.

"What was left for the unfortunate Greeks to do in such a barbarian mode of warfare, but to run? They did so, became considerably entangled, no doubt, and thrown into confusion with their massive weapons, finally throwing them away to facilitate their 'strategic retreat.'

"In the face of such facts, established by history, every man, whose mind is not taken up with personal theories or prejudices, must arrive at the following conclusions:

"1. In the use of hand-arms the effect does not depend on their length, but on the courage which the combatant possesses, and which induces him to close with his enemy to a distance at which his weapon becomes effective.

"2. The certainty of the effect of an attack lies in the impetuosity

[11] A measure of length in Russia exactly equal to twenty-eight English inches (Johnson's Universal Cyclopædia).

12 inches = 1 foot (0.3048 metre, as in England and the United States).
7 feet = 3 archines = 1 sashén. 500 sashéns = 1 werst (1066.79 metres).
1 archine (16 wershocks) is, therefore, 0.7112 metre, or 28 inches.

J. P. W.

of the forward movement. Even Cæsar said that a rapid advance heats the blood and causes men to forget the feeling of danger. Now, since the rapidity of movement in such a combat is of so great importance, everything that could possibly delay it should be avoided.

"3. The longer a weapon is the more difficult it is to handle. A long weapon impedes movement and occasionally brings it to a standstill. Consequently, even in an attack on foot it is not advantageous, but harmful. Far more is this the case in an attack on horseback.

"But we are wandering too far from the point. The principles here laid down were enunciated in much briefer and far clearer form by Frederick the Great in his well-known reply to the report laid before him on the necessity for altering the Prussian cavalry sabre (which was two inches shorter than the enemy's): 'In that case our cavalry will have to move up two inches nearer to the enemy!'

"The American Holmes[12] remarked in words quite as striking that '*the race that shortens its weapons lengthens its boundaries.*'

"If these remarks are worthy of acceptation we can estimate at its true worth not only the reintroduction of the lance in so many of the European cavalries, but also the significance to be attached to such a fact.

"VI. However that may be, it will probably be said in reply that the lance nevertheless has many advocates; and not so very long ago, in the first half of this century, Marshal Marmont expressed the opinion that 'the lance is the queen of weapons.'

"To this I reply that the advocates are not at all in accord one with another on this subject. In the first place, Marshal Marmont served mainly in the general staff. Hence, he naturally took kindly to well-sounding phrases. Moreover, he did not himself make the remark as it has been handed down to us, but it comes to us through some other person. Consequently, it is impossible to accept any opinion of his as gospel, especially in a matter of armament. In such matters the first, best, sensible Cossack, or non-commissioned officer, can often speak to better purpose and more practically than a marshal, even if he did not come out of the general staff.

"The same phrase was spoken as early as the seventeenth century by the Austrian general Montecuculi. But in this as in all such cases, we must consider the circumstances under which it was said. That was at a time when the bayonet had not yet been discovered, and when the infantry consisted of spearmen and musketeers, hence, of soldiers armed either with a hand-arm or a fire-arm only. The above saying was like a kind of axiom expressing what kind of weapon decided the final result of a combat.

"The same may be said of the principle enunciated by Suwarow:

[12] "Autocrat of the Breakfast-Table," p. 22. J. P. W.

'The bullet is eccentric, the bayonet alone is brave.' Only because in his time there was no bayonet, had Montecuculi said, 'The bullet is eccentric, the lance is brave.' And he said this in his way, and not in the words of Suwarow.

"We must, therefore, bear in mind that if the lance ever was the queen of weapons, this was only so by way of comparison with fire-arms, not with another hand-arm. When the bayonet, however, crowned the gun, the spear and the pike disappeared from among the infantry, where both had always been more effective than in the cavalry because the foot-soldier carried them and wielded them not with one hand, but with two.

"But in questions of armament it is not only important to study each weapon in and for itself, but we must also consider its use, the effect which it may have on the *morale* of the troops, and from this point of view, moreover, the mutual effects between fire-arms and hand-arms. If I have not tired you too much, I will discuss this subject later on."

With reference to the bayonet, referred to above, General Dragomiroff, after touching briefly upon the history of its discovery, and the improvements made from time to time in this relatively new weapon, makes the following remarks in the form of a note, which we add in this connection:

"Truth compels me to say that the lance also counted among its advocates Marshal von Sachsen, in the eighteenth century, and in the present time—in the first half of the nineteenth century—Jomini and De Brack. The first-named clung to the lance, as I understand it, merely as a matter of tradition. The second argued the question on purely theoretical grounds. It will be sufficient to call attention to the fact that he regarded it as the best *weapon of attack*, whereas, in the entire range of hand-arms, strictly so called, it is the weapon most suitable for defense, since it is calculated to prevent the enemy from approaching too near.

"Jomini says, for instance, 'The lance is the best weapon of attack for mounted troops attacking in line, because it can reach the enemy while *he cannot come near*. It is, therefore, a weapon of attack which prevents the enemy, whoever he may be, from coming too near; according to this its *rôle* is a purely defensive one.' We see by this how even the best theorists often involve themselves in contradictions within the space of two or three lines. However, I lay no great stress on the supposed impossibility of approaching a body of troops armed with the lance, for this difficulty was, as already observed, overcome in the time of the Romans.

"Jomini, too, was acquainted with the battles of the Roman swords against the Greek lances. And he certainly understood them correctly, but he forgot them, and therein we have an illustration of

one of those cases where a 'well-known' fact has been entirely forgotten.

"Now, as regards De Brack: there was an officer from among the troops, and his view, therefore, deserves far greater consideration. But he upheld the lance with arguments somewhat artificial, the conclusions from which—whether designedly or not—seem rather exaggerated. He says, for example, 'The lance is a hand-arm the moral effect of which is very powerful and its wounds very dangerous.' If we carry this argument to its natural conclusion, it is evident that the lance is a hand-arm with a very decided effect on cowards, but which will never hold brave troops back; the wounds of the weapon are indeed very dangerous when it is accurately directed, but owing to its length its aim is quite uncertain.

"Moreover, the lance overburdens the horse with a considerable weight, and it incommodes the movements of the rider; it is quite impossible too, during the present short term of military service, to learn to wield it in a manner at all satisfactory. Consequently, its advocates have but a single fact to fall back upon in its defense,—namely, the possibility of keeping the enemy at a considerable distance; beyond that they lose sight—intentionally or unintentionally, but quite completely—of all other sides of the question.[12]

"VII. I have forgotten thus far to answer the question why cutting weapons are not in use by the infantry. The answer is simply this: because it would not be convenient to carry such weapons on the gun, whereas the combination with the bayonet is quite convenient. And since the gun in this way serves a double purpose,—first, as a fire-arm, then as a shaft for the bayonet, as a substitute for the lance,—there is no further room for a cutting weapon.

"As improvements in mechanism go on, the gun will probably never be used and loaded like a pistol, but will always remain of such a length that any manipulation other than a two-handed one will be an impossibility. In addition we have the bayonet, for the proper handling of which both hands are also quite necessary. And finally, to strengthen us in our view, there is the fact that it is quite unnecessary to fight the enemy with a cutting weapon, when you can reach him with a thrusting weapon.

"It is clear, therefore, that, since we have for a thrusting weapon

[12] Recently General Dragomiroff published the following directions, which deserve to be mentioned in this connection. He demands that the horses of the Russian cavalry in time of peace shall be accustomed to the sight of the lance-flags ("streamers," in Russian). Hereafter, in the exercises in the "penetrating attacks" of the regular cavalry (armed only with the sabre), to have the Cossacks, whenever it is possible, to represent the enemy, their pikes to be supplied for this same purpose with streamers (in the Don Cossacks the front rank carry pikes). At the end of his order the General says, "A soldier need not fear the lance if he carries a sabre; but horses must be accustomed to the sight of lances and streamers."

a shaft like the gun, which can thus serve two purposes, it is entirely unnecessary to go on a search for a cutting weapon.[13]

"'Yes,' you will say; 'but how about the national usages?' National usages are to be taken into account only when it is a question of using a weapon under difficult circumstances, for instance, when it has to be wielded by but one hand, as is the case in the cavalry. When we can use both hands, however, in the management of a weapon, it is quite sufficient to be able to use it as a thrusting weapon.

"And yet national usages make their appearance even in such cases. Thus, it has often happened with us Russians that in the hand-to-hand conflict various objects have come into play, which are used for striking from above downward. And every time the Russian infantry did not, for some reason or other, find muskets available for use, some cutting weapon was invariably brought to light. Thus, in the Crimean War,

[13] Formerly it was considered necessary to give the gun, provided with its bayonet, such a length that a rider on his horse could not reach the infantry soldier with his sabre. This is one of those very cases, referred to in the preceding section, in which considerations, not resident in the weapon itself, may influence its length.

This prejudice has been preserved ever since the time when the length of the lance was first fixed. It has not given way before the evidence derived from the Roman arms, nor the reply of King Frederick II., which he made on the occasion of the sabres which were two inches shorter than the enemy's. And for that reason is the barrel of our Berdan gun four inches longer than is required by the ballistic properties of the arm, and for the same reason the bayonet blade is seven inches longer than is necessary to pierce a man. The result is a reduction in initial velocity (?) and an unnecessary overloading of the infantry soldier.

These are, on the whole, only official devices, which are intended, so to speak, to prevent the enemy from reaching you, and which cause the everlasting truth —that the result of the use of hand-arms is not dependent on their length—to be forgotten.

And we fail to notice that combinations are suggested by the instinct of self-preservation, which can never be made to conform to the military precept that in war he alone kills his enemy who is not himself afraid of being killed by him.

"But," you will probably say, "can we kill you at three thousand paces?" Undoubtedly; and I, too, quite alone, can kill you at three thousand paces. Consequently an equality is reached in this, just as, in general, all those technical improvements which have been made in the human fist resolve themselves into nothing the moment both adversaries have introduced them to an equal extent into their armies. A comparison of dissimilar weapons is unnecessary, for it can never clear up a question which in theory should always be tested under exactly similar circumstances, if we desire to arrive at positive results and not mere fancies.

Of course, in practice, and especially in transition periods like the present, adversaries which are unequally armed may be engaged in war with each other. But these very cases prove that superiority in armament has not that great importance by far which those fond of comparing ranges, percentages, etc., in time of peace imagine. In proof of this we have the war of 1870, in which the French carried better weapons than the Germans (infantry, not artillery arms), and also the war of 1877, in which the same was true as regards the Turks in comparison with us,—the Russians.

The truth is this, that at the final struggle we must battle with equal arms, and that then he will be victorious who exposes himself most daringly to death,—that is, fears least for the safety of his valuable life.

two naval crews took part in the battle of the Alma, using only their boarding weapons.[14] And at Sebastopol the militia of Kursk was seen fighting with axes.[15]

"In the cavalry, which has but one arm available for fighting, the cutting arm is preferred in all those countries in which it is used. In the entire Orient I do not know of a single people among whom anything resembling the 'bars' (*barreaux, Pallaschen*) of our cavalry is to be found. To be sure, several carry lances, but I will venture the assertion that the explanation of this is found in the character of the enemy to be fought, and that the latter were not much given to warfare. Wherever the enemy not only does not refuse battle, but rather seeks it, the cutting weapon has always been preferred to the thrusting weapon.

"VIII. *Actual use of the weapon.* By his work we know the laborer. Everybody knows that a skillful workman can, with no other implement but his hatchet, make objects which an unskillful one cannot make, even if he has the most excellent implements in the world at his disposal.

"Before all military men comes up one and the same question for consideration, Why should we weigh down the soldier with an arsenal of arms, if we do not instruct him how to make use of them?

"Nothing is more clearly evident than this truth. And yet, in the standing armies, it has taken a long time before this was understood, while the peoples of Asiatic civilization have always shown that they comprehended it fully.

"In a word, the actual use of a weapon presupposes, as a necessary condition, the *instruction and training* requisite for its proper manipulation, taking for granted that we do not admit that it is sufficient to overload a soldier with arms, and then expect him to know of himself not only how to cut and thrust, but also to be able at any moment to select from the arsenal above-mentioned exactly the weapon which is best suited to the particular case.

"Hence follows the necessity:

"(1) For instructing the soldier in the use of each weapon with which he is provided.

"(2) For inculcating in the soldier the instinctive habit of determining, without requiring much time for consideration, the order in which his various arms are to be used.

"That will come of itself, many people will no doubt say. How could it be otherwise? It certainly does seem as if all this would come of itself, but, as a matter of fact, this is by no means the case.

[14] According to the report of an eye-witness.

[15] In the cases here cited it is naturally only armed forces, more or less regularly organized, that are considered. In civil wars arms are made of all kinds of materials,—pitchforks, scythes, knives,—all come into play.

"Let us call attention to but one fact in this connection: since when have we been teaching our men to thrust and to cut? And do we insist upon this instruction to-day as strongly as its importance demands?

"I know beforehand what answer all those will give who know what points are essential to the question, and who do not allow themselves to be deceived, and do not seek to mislead others with their own predetermined conclusions.

"At the same time the fact must not be overlooked that this is a case of using our arms, not in a state of quiet mental composure, but in the very midst of danger. Under such circumstances, however, men do only such things as have become in time of peace second nature to them.[16]

"IX. What has particularly led to the neglect of practice in the use of weapons is the organization of the armies of to-day, and their continually increasing strength. The study of moving large masses of troops has taken up the attention of all to such an extent that all those movements which the soldier must personally execute have been entirely lost sight of. For the benefit of those of my readers who doubt this, I would like to give a brief summary of the history of instruction in target practice, which, I am quite sure, the military men who entered the service after the Crimean War are not familiar with.

"In the last century, and even in the first half of the present one, we taught only how to load and to bring the musket up to the cheek, never to aim. For firing was directed straight to the front, not on a definite target, and was conducted with blank cartridges, not with ball cartridges.

[16] Involuntarily an incident of the war of 1854, related to me by an eye-witness, occurs to me in this connection.

"A battery came into position and opened fire. At once shot and shell rained down upon it. Suddenly I noticed"—so relates my eye-witness, who had been recently promoted, and was himself for the first time under fire—"that one of my cannoneers turned about, struck himself on the back with his closed fist, and ran quickly towards the limber; there he stretched out his hands as if to receive a projectile, turned back, struck himself again as before, and returned to the gun. On his arrival there he made a motion as if he were giving up the projectile which he was carrying, turned about once more and returned to the limber.

"I do not know how long he would have kept up these empty movements, but he did not stop until a non-commissioned officer stepped up to him and brought him to his senses by setting him straight in the manual of drill which had just then been introduced. This cannoneer, who had thus completely lost his head under fire, did with perfect accuracy not only what was necessary, but also what had been taught him. According to the drill regulations it had been required on turning about to strike the thigh, a fact which, very probably, is not known to those who entered the service after the Crimean War. The object of this movement was to secure the dagger in place and prevent it from sliding to and fro during the movement."

"I can remember the time when marching and the manual of arms took up the entire time for drill, and under no circumstances did any one ever trouble himself about the way in which the men aimed,—an epoch in which (only once during the entire camp season, and then not even yearly) only a few companies of the regiment were ordered out, generally on Sunday, for target practice, at which the men fired at most three rounds.

"The regiment here referred to was considered one of the best trained, and yet that was all there was in the way of instruction in firing! Bayonet exercise was entirely out of the question; men were only taught to cross bayonets.

"Such neglect in regard to firing is a proof of the otherwise almost incredible yet well-authenticated fact that the world was then convinced of the uselessness of instructing the men in the use of weapons. They believed that if the soldier knew the manual of arms, and at the command, 'On! Fire!' could bring up his piece and fire a blank cartridge, everything needful was accomplished.[17]

"Only after the introduction of rifled fire-arms was the necessity for no longer merely loading with blank cartridges, but also practicing accurate firing with ball cartridges, admitted, and the impossibility of learning to fire without bullets and targets recognized. Finally, it was conceded that masses might be very well instructed in movements in column, and yet not be prepared for war, unless each soldier had learned not only to march but also to aim and fire.

"And it was not until this time that parade drill was transformed into true military instruction and training.

"In the case of the hand-arms the progress of events was exactly the same. To instruct men in cutting seemed so decidedly superfluous that up to very recent times the blades were not even sharpened. And although the military world has quite recently decided to do this, it was done, if I am not mistaken, on account of the impossibility, in the event of mobilization, of undertaking such an operation with such a large number of weapons. Naturally, only after the sabres were sharpened did we begin with true fencing.

"X. In the same way we have only recently awakened to the idea that practical exercises with hand-arms require targets, just as much as those with fire-arms.

"I will go so far as to assert that they require a target even more,

[17] The carbineers (*carabiniers*) fired at targets, to be sure, but they were only a drop in the bucket, for they numbered only six men to the company.

In this connection I cannot help recalling that, in the Crimean War, a non-commissioned officer who, as instructor of the *Opoltshenin* (militia), had been ordered to teach the loading of the fire-arm, and who, when asked by an officer of this militia to execute loading with cartridges, replied very respectfully but decidedly that he was well versed in the various loadings "in 12, 8, or 4 times, or at will," but that he had never learned to load "with cartridges."

for in the actual use of hand-arms there is a limit of time set, which in firing plays but a secondary part.

"The hand-arm is used in battle when it comes to the hand-to-hand conflict; it is evident, therefore, that if a man in giving a blow hesitates, even if it be but for the fractional part of a second, the enemy may, in the mean time, strike him; the battle will thus be practically already at an end. If the blow does not take effect,—that is, if he merely strikes the air or gives only an ineffective blow,—he will, very probably, in the very next moment be placed in a position where it will be impossible to make good his awkwardness.

"It is consequently evident that, in the use of hand-arms, it is particularly important to be able in a moment to estimate time and space accurately, and this, indeed, is true in a way, of which in firing a man can have no conception.

"But this is nothing in comparison with the importance of the double time measurer which a man must carry in his head. All indications of this instrument must be transmitted instantly to the eye and the hand, and the combatant must estimate them without stopping to pass judgment and, as it were, by simple reflex action. No hesitation is permissible, for the least delay may cost a man his life.

"Nor is this all. A man may have grasped the fleeting moment quite successfully, and estimated the distance quite accurately, only he may have held the blade, as he drew it towards the line of impact, not parallel with but oblique to the direction in which the impact takes place, and so given only a scratch in place of an effective cut. Nor should he forget at the moment of slashing to let the blade whizz, and not simply chop away as if with an axe.

"All this proves that the delivery of a good sabre stroke is by no means a simple and easy matter, and without repeated practice will remain an almost impossible feat.

"For that reason, those men who have detected in a weapon something other than a badge of military office, something other than a saluting stick (*barreau à salut*),[18] have always set extraordinary value on the practical study of its use. They have even arranged for this purpose rules which are very characteristic but also very significant, as is the case with all such as have been evolved under the empire, which have proved necessary and enduring.

"Among the mountaineers of the Caucasus they began, for instance, under the title of a child's game, with the exercise of cutting off the course of a running stream; is not that really wonderful?

[18] Free-thinking men are unrelenting in their unconscious irony, and do not hesitate to call things by their right names. It has not been very long since the cavalrymen never called their sabres anything but bars (*barreau*), and, indeed, what is an unsharpened blade, as a matter of fact, but a bar, be it made of steel or of iron?

"Alas, among such people in a primitive state, the power of observation is quite a different thing from what it is with us. The savage can perceive things which escape civilized man for centuries, such as, for instance, this, that a blow directed only very slightly to one side against the surface of water will make the mud fly. And this was only the beginning of a system of training which was carried on by practice through the rest of life, and by exercises in cutting directed against various objects."

CONCLUDING REMARKS.

We fear that this *résumé* of the views of Dragomiroff on hand-arms has been too detailed in character for many readers. And yet we could not make up our minds to abbreviate the sayings of this intelligent Russian general, because they contain, in fact, many golden lessons and precepts. At all events, the reader will be convinced, from what is here presented, that he has to do with a remarkably clear head, which is trying to arrive at a clear comprehension in regard to the cause and effect of the factors which are active in war, and which carefully takes its measures in accordance with the conclusions reached. General Dragomiroff is not only regarded as a splendid troop-leader in his native land, but in Berlin, Vienna, and Paris his ability is also well-known and appreciated. It is, therefore, of some importance to attempt to find out accurately what views are held in the leading military circles of Russia, in order seasonably to estimate them at their true worth.

A LESSON FROM THE "CHICAGO."[1]

NELSON once saw an American squadron in European waters. Whether it was Captain Richard Dale's squadron, in 1801, Captain Richard Valentine Morris's squadron in 1802–3, or Captain Edward Preble's squadron in 1803, I do not know; but it is said that the great chief paid much attention to the vessels, and that his verdict was, "There is in the handling of those transatlantic ships a nucleus of trouble for the navy of Great Britain."

The trouble came in 1812. Great Britain had waged for many years a naval war of unexampled proportions, and by devotion and valor had broken the back of the most vigorous maritime combination that, in all her history, had been arrayed against her. The fleets of France, Spain, the Netherlands, and Denmark had, once or oftener, together or singly, been met and beaten as fleets had never been beaten before, and, although hostilities still dragged on, Great Britain was entitled, if ever in her career, to consider herself supreme mistress of the ocean. But from the remote West, where Nelson had detected the premonitory warning, an innocent-looking cloud quickly overspread the horizon, and in a short space grew so black and threatening as to make it appear to many capable observers that the colossal power which had been built up with so much labor, time, and treasure at the cost of the Old World, was destined to be suddenly, and even easily, shattered by the prentice lightnings of the New.

From the day of the declaration of war by the United States in June, 1812, up to June, 1813, the history of the maritime affairs of Great Britain was, so far as American efforts influenced it, one of almost unrelieved disaster. Quotations from the *Times* of the period will serve to show how the gloom deepened. On October 7, 1812, that journal said,—

"The loss of a single frigate by us, when we consider how all other nations of the world have been dealt by, . . . is but a small one."

On December 26, 1812, it said,—

[1] Reprinted from the London *Fortnightly Review* by permission of the Leonard Scott Publishing Company of New York, the American publishers of the *Fortnightly Review*.

"Certainly there was a time when it would not have been believed that the American navy could have appeared upon the sea after a six months' war with England; much less that it could, within that period, have been twice victorious. *Sed tempora mutantur.*"

On December 28, 1812, it exclaimed, concerning the excuses for the loss of the "Macedonian,"—

"O miserable advocates! Why, this renders the charge of mismanagement far heavier than before! In the name of God, what was done with this immense superiority of force? Why was not a squadron of observation off every port which contained an American ship of war? Why was not Rodgers intercepted with his whole squadron and taken or destroyed within sight of his own coasts?"

And on March 29, 1813, it said,—

"The public will learn, with sentiments which we shall not presume to anticipate, that a third British frigate has struck to an American. . . . This is an occurrence that calls for serious reflection,—this, and the fact, stated in our paper of yesterday, that Lloyd's list contains notices of upward of five hundred British vessels captured in seven months by the Americans. Five hundred merchantmen and three frigates! Can these statements be true? And can the English people hear them unmoved? Any one who had predicted such a result of an American war this time last year would have been treated as a madman or a traitor. He would have been told, if his opponents had condescended to argue with him, that long ere seven months had elapsed the American flag would have been swept from the seas, the contemptible navy of the United States annihilated, and their maritime arsenals rendered a heap of ruins. Yet down to this moment not a single American frigate has struck her flag."

Why were you thus humiliated and punished? The answer is one which also explains the great majority of British humiliations ashore as well as afloat. You underrated your opponents. In the war of 1775–83 you had crushed the infant American navy out of existence. From 1793 to 1812 you had been almost continuously engaged in crushing maritime foes who were—I say it not to their discredit, but to the credit of the Americans—of second-rate quality in comparison with those new ones whom you had to cope with in 1812–15. You failed to observe how the United States had progressed in thirty years. You forgot that she had trebled her population and quadrupled her revenue. You were content to believe that you had dealt once and forever with her "contemptible" navy. It flattered your national pride, too, to think that the foes whom for nearly twenty years you had been so successfully confounding at sea, were as good fighters as you could possibly encounter. I wonder that the brilliant episodes of the Franco-American war of 1798–1801 did not open your eyes, and that others besides Nelson did not take to heart the signs of the times. But you were then, as always, insular, prejudiced, and contemptuous. You were blind to the growth of the world around you.

You are, I think, almost equally blind now. You know hardly anything about the greatest and most populous English-speaking

country in the world. Eighty years ago your indifference on the subject of the United States very nearly landed you in maritime confusion. At present, perhaps, it does not actively menace your welfare. The season for warfare between you and the United States is probably over forever, for both parties appear to have made the very admirable discovery that honest arbitration is a more satisfactory solution for international difficulties than an appeal to arms, and both parties are blessed with an inherent sense of respect for the decisions of any properly constituted tribunal. But although your indifference to-day may not threaten you with active evil results, it certainly does hamper you with passive ones. It renders both you and the United States far less powerful for good than you ought to be. It divides and weakens the expression of the Anglo-Saxon will,—the will which ought, I am persuaded, to have upon the world in the future an even greater influence than it has had in the past.

You and your American cousins are, I dare say, very good citizens of your respective countries; but you are inclined, owing to your selfishness, to be very bad citizens of the world, in which, nevertheless, you have vast duties and responsibilities. The United States, with its sixty-five millions of highly civilized English-speaking people, deems it fit at present to stand very much aloof from the affairs of the universe, and deems it safe to do so, because four thousand miles of sea separate the United States from any first-class power. That policy may, no doubt, be carried on for many years to come if Americans continue to favor it. But they will not continue to favor it. They are growing so rich and strong and rightly proud of themselves that, in my humble opinion, the day is not far distant when they will think it proper to have a voice in the arrangement of matters outside their own borders,—outside even the New World. But you cannot hold aloof even now. For twenty years Europe has been standing to its arms. You may keep out of the conflict when it comes; but if you do keep out of it, it will be either because Fortune decrees that none of your myriad interests are to be trodden upon during the turmoil, or because you are selfish or have become cowardly. I mean that so long as you are determined to be guided by accepted principles of honor and duty,—and I trust and believe that you will always be guided by them,—it does not rest with you whether you will or will not be involved in a European war to-morrow. It rests with the course of events. You, then, are to that extent at the mercy of events. The United States only avoids being in the same sense at the mercy of events by submitting to have little or no voice in exterior affairs. Neither position is a dignified one for a great English-speaking power. The dignified and the beneficent position would be one of controller of events. It would be worthy of Great Britain and the United States, and well for all other countries, if you were able to say to Europe, as

it stands now armed to the teeth, "Only by our leave shall you fight; and if you fight, only with our permission shall the victor keep his spoils."

And because the united Anglo-Saxon will might do this and much more, it is sad to see Great Britain and the United States wasting their opportunities and imperiling their mission by trying to cultivate the fiction that they have different objects in life and need not closely associate one with the other. This fiction is not so flourishing as it was. Indeed, it is not flourishing at all now. It is cankered at the roots; it is withering; and it can never revive. Yet it is diligently tended and watered by certain people on both sides of the Atlantic. The most assiduous waterers in America are the people who have never been out of their own country. This is, perhaps, natural. But it does not appear to be natural that among the most assiduous waterers in England are to be found the conductors of a London evening journal, which frequently either misrepresents or sneers at things American in spite of the fact that the proprietor of the journal is an American.

The United States resembles Great Britain in not being obliged to maintain a disproportionately large standing army. It resembles it also in having a great number of sons who have a peculiar aptitude for the sea-life. It is, therefore, in the utilization of sea-power in its various aspects that the two countries may best co-operate and assist one another in the future. If they were to come, as they surely will come, to an understanding to employ their combined naval forces for the preservation of general peace and for the forwarding of the common interests, few countries, no matter how belligerently inclined, would care to defy the alliance even now, and none would dare to question its will after it had rearranged its forces in frank recognition of all its responsibilities. It is not merely that the combined navies would be strong. Far more weighty are the considerations that the British empire and the United State share between them nearly all the work of providing other countries with the food, raw material, and manufactures which those countries cannot provide at home, and of carrying the ocean-borne trade of the world. The interests of your ever-growing commerce require the maintenance, if not of peace, at least of open ports everywhere. Why should not your combined navies declare, "We refuse henceforth to acknowledge the right of any civilized power to close her ports, or the ports of another power, by blackade or otherwise." Surely that would sound the knell of war!

I should neither advocate nor mention such a project did I not honestly feel that, upon the whole, the world can afford to place its confidence in the integrity and fairness of the Anglo-Saxon race. It is a strong race, a level-headed race, a cool race. It has faults, but perhaps it has fewer faults and less dangerous weaknesses than any other; and already the world is largely in its debt. I do not believe that if that race were all-powerful any other race would be oppressed,

for it is the race which first invented liberty and representative institutions. I advocate the idea because, for the sake of peace and disarmament, it seems necessary that some superior power should be created, and because I can imagine no power that would, all things considered, be more beneficent and less aggressive than the one indicated.

If it be the mission of the United States to co-operate to these ends with the country whence the Pilgrim Fathers sailed, the condition of the United States navy assumes a new importance. Hitherto that navy, at least for three-quarters of a century, has exercised little or no influence, directly or indirectly, upon the European politics of any European nation, and its state has been a matter mainly of academic interest in the Old World. But in the future, even if all my ideas as to the mission of the Anglo-Saxon race be wrong, the American navy must necessarily enter upon a new era. The lesson taught by Mahan has found listeners among his own countrymen. They know now that neither a mercantile marine alone nor a navy alone can make sea-power. They are reviving their mercantile marine, and, estimating sea-power at its true value, they will inevitably increase their navy in due proportion; for, if they mean anything at all, they mean to be in all senses of the words a great nation. What, then, have they already in the nature of a navy, and what material do they possess wherewith to build up a navy in all respects worthy of them?

At the outbreak of the War of Secession the United States possessed, in serviceable condition,—I accept the statements of Professor J. R. Soley, United States navy,—one ship of the line, six screw frigates, fourteen screw sloops, thirteen paddle steamers, seven sailing frigates, twenty sailing sloops, three brigs, three sailing store-ships, and two steam-tenders, or sixty-nine war-ships in all, besides useless vessels of various classes. During the war there were constructed or ordered sixty-four ironclads of different types, and one hundred and forty-seven unarmored vessels, ranging downward from sloops of the largest size to small tugs. Thus a considerable navy was created, but it was to a large extent a navy suitable only for home service, and much of it, having been hastily built of improvised materials, was not durable. During the following five-and-twenty years it was allowed to fall very much into decay. Few vessels—and those of neither modern nor formidable design—were added, and all departments of the service were starved by Congress. After 1880 came an awakening. The interior resources of the country were not then equal to the entire construction and fitting of large steel men-of-war, but pending the establishment in the United States of rolling-mills and gun-factories, and the organization of well-found dock-yards, designs, and materials, so far as these could not be obtained at home, were imported from Europe, and the building of a new navy was begun. At the same time the development of the lacking domestic industries was encour-

aged, and the happiest results have followed. To-day there is no branch of ship-building that cannot, in every one of its processes, be carried out in the United States with American material and by means of American brains and hands, and in less than fifteen years the country has thus achieved a new independence. I believe that it was after 1880 that a well-known American, upon rising to respond to the toast of "Our Navy," prefaced his speech by saying, "If the length of my reply is to be governed by the size of our navy, I have already said too much." Many things have happened since then, and in 1894 the United States possesses a navy which, though not very large, is, upon the whole, remarkably powerful, which is rapidly growing, and concerning which no American orator ought to feel otherwise than proud.

In the following survey of the ships of the navy of the United States I deal only with modern vessels, such as may be expected to be of serious value in a future war. The American navy list contains the names of many other craft, of slow and obsolete dispatch vessels which were built after the close of the war and before 1880, of old and thinly-armored monitors, of vessels dating from before the war, and even of one or two much-prized relics of the days when steam had not usurped control of the sea. I confine myself to the consideration of steel or iron ships laid down or radically rebuilt since 1880. These constitute the whole of the effective naval force of the United States, and they may be thus classified:

ARMORED SHIPS.

Name.	Tons.	I. H. P.	Speed.	Coal Capacity.	Steaming radius.	Length.	Beam.	Draft.	Launched.
			Knots.	Tons.	Knots.	Ft. In.	Ft. In.	Ft. In.	
Battle-ships:									
Iowa	11,296	11,000	16.5	2000	6,000	360 0	72 2	24 0	bldg.
Indiana . . .	10,200	9,000	16.2	1800	16,000	348 0	69 3	24 0	1893
Massachusetts	10,200	9,000	16.2	1800	16,000	348 0	69 3	24 0	1893
Oregon . . .	10,200	9,000	16.2	1800	16,000	348 0	69 3	24 0	1893
Maine . . .	6,648	9,000	17.0	822	7,000	318 0	57 0	21 6	1890
Texas . . .	6,300	8,600	17.0	850	7,000	301 4	64 1	22 6	1892
Coast Defense Ships:									
Monterey . .	4,138	5,072	14.4	200	1,300	256 0	59 0	14 6	1891
Puritan . . .	6,060	3,700	13.0	580	1,500	289 6	60 1	18 0	1884
Terror . . .	3,990	1,600	12.0	332	1,800	259 6	55 10	14 6	1883
Miantonomoh	3,080	1,600	10.5	332	1,800	259 6	55 10	14 6	1883
Amphitrite .	3,990	1,600	12.0	332	1,800	259 6	55 10	14 6	1883
Monadnock .	3,990	1,600	12.0	322	1,800	259 6	55 10	14 6	1883
Cruisers:									
New York .	[1]8,150	16,500	21.0	1150	13,500	380 6	64 10	23 4	1891
Brooklyn . .	9,150	16,000	21.0	1650	6,300	400 6	64 0	24 0	bldg.
Ram:									
Katahdin . .	2,183	4,800	17.0	?	?	250 9	43 5	15 0	1893

[1] Her acceptance displacement was 8480 tons.

UNARMORED SHIPS.

Name.	Tons.	I. H. P.	Speed.	Coal Capacity.	Steaming radius.	Length.	Beam.	Draft.	Launched.
			Knots.	Tons.	Knots.	Ft. In.	Ft. In.	Ft. In.	
Protected Cruisers:									
Columbia . . .	7350	21,000	25.0	2400	13,000	412 0	58 0	22 6	1892
Minneapolis . .	7350	21,000	23.0	2400	13,000	412 0	58 0	22 6	1893
Olympia . . .	5500	13,500	20.0	1895	10,000	340 0	53 0	21 6	1892
Baltimore . . .	4600	10,064	19.5	1140	6,800	327 6	48 6	20 6	1888
Philadelphia .	4324	8,815	19.6	1175	7,000	327 6	48 6	19 2	1890
Newark . . .	4083	8,869	19.0	850	5,500	310 0	49 2	18 9	1890
San Francisco .	4083	10,400	20.1	680	4,200	310 0	49 2	18 9	1890
Charleston . .	4040	6,666	18.2	800	5,200	312 0	46 0	19 7	1888
Cincinnati . .	3183	10,000	19.0	556	4,500	300 0	42 0	18 0	1892
Raleigh	3183	10,000	19.0	556	4,500	300 0	42 0	18 0	1892
Chicago . . .	4500	5,084	15.3	940	5,000	225 0	48 2	19 0	1885
Boston	3189	4,030	15.6	490	4,000	270 3	42 0	17 0	1884
Atlanta	3189	4,030	15.6	490	4,000	270 3	42 0	17 0	1884

Besides these, there are sixteen other vessels and two torpedo-boats. Orders have also been given for the construction of twelve more torpedo-boats.

To summarize, the United States has, built or building, in addition to obsolete vessels:

	No.	Tonnage.	Guns.	Torpedo-Tubes or Ejectors.
Battle-ships	6	54,844	238	37
Coast defense ironclads	6	26,158	80	—
Armored cruisers	2	17,300	86	12
Armored ram	1	2,183	4	—
Total armored	15	100,485	408	49
Protected cruisers	13	58,574	354	50
Other cruisers and gunboats	16	22,542	229	33
Torpedo-boats	14	1,450	43	42
Grand total	58	183,051	1034	174

This is a modern fleet superior, upon the whole, to any modern fleet in existence, the fleets of Great Britain, France, Italy, Russia, and perhaps Germany only excepted, and most of the vessels have not, I believe, their betters of similar class in any navy. To some of these vessels I would call particular attention, since there is no doubt that the value of a fleet depends quite as much upon the quality as upon the mere numbers of units composing it, and since, in respect of the qualities of several of its newer ships, the United States assuredly stands far ahead of the rest of the world to-day.

First among these craft I will take the three battle-ships of the "Indiana" class, and the single battle-ship "Iowa." To indicate some of their merits I will compare them, in respect of a few important particulars, with the "Renown," which may be considered as the finest battle-ship of about the same size belonging to Great Britain, and with the "Jauréguiberry," which, I imagine, deserves to be called the finest battle-ship of about the same size belonging to France:

	Indiana.	Iowa.	Renown.	Jauréguiberry.
Displacement, tons	10,200	11,296	12,250	11,824
Indicated horse-power	9,000	11,000	12,000	14,200
Speed, knots	16.2	16.5	18.0	17.5
Cost, £	604,400	[1]900,000	679,136	980,284
Total guns	46	46	42	34
Metal thrown, lbs.	6,724	5,726	2,740	2,821
Guns bearing ahead	16	16	13	15
Metal thrown ahead, lbs.	3,299	2,799	1,219	1,858
Total muzzle energy of bow fire, foot-tons	100,505	83,221	34,122	63,126
Guns bearing astern	16	16	13	13
Metal thrown astern, lbs.	3,299	2,799	1,219	1,852
Total muzzle energy of stern fire, foot-tons	100,505	83,221	34,122	62,898
Guns bearing abeam	24	24	24	19
Metal thrown abeam, lbs.	5,530	4,530	2,571	2,032
Total muzzle energy of beam fire, foot-tons	169,152	138,584	72,237	81,364
Thickest belt armor, inches	18	14	[1]18	17.7
Thickest heavy gun armor, inches	17	15	[1]12	14.5
Thickest battery armor, inches	8	8	[1]5	4
Thickest deck armor, inches	3	3	[1]3	2.7
Extreme coal capacity, tons	1,800	2,000	800	800
Steaming radius, miles	16,000	[1]6,000	[1]5,000	[1]4,800

[1] These figures are doubtful.

It will be observed that the "Indiana" and "Iowa" compare unfavorably in the matter of speed with both the "Renown" and the "Jauréguiberry," but in almost every other respect they seem to me to be immensely, nay, crushingly, superior. And I do not regard great speed as of supreme importance to the battle-ship. What, for example, could be the value, in practice, of the "Renown's" superior speed as against the "Indiana"? It might, it is true, enable your ship to force an action; but with an opponent so greatly superior in gun-fire, your ship could scarcely hope, other things being equal, to achieve success. If the two ships engaged bow to bow, stern to stern, or bow to stern, the United States's ship could deal blows much more numerous than those of the British ship, and in the aggregate nearly thrice as heavy. Even if they engaged broadside to broadside, the aggregate energy of the American fire would be much more than double that of the British. Put your huge "Royal Sovereign" or your coming

"Prince George" as your champion instead of your "Renown" and you will not fare much better; for the Americans distribute their guns more advantageously than you do, and their battle-ships which I have cited represent more sensible compromises of the rival claims of speed, radius of action, gun-power, and armor than any of yours. If your battle-ship be unequal to the task of engaging another battle-ship of inferior displacement, superior speed will avail the former little, unless to enable her to run out of danger. Yet is not the main object of a battle-ship, after all, to fight? In the War of 1812 you were obliged, much against your will, to take lessons from the United States on the subject of the proper way of gunning frigates. You might do worse now than take lessons from the United States on the subject of the proper way of gunning battle-ships, and also of gunning cruisers, for the American cruisers are as superior to yours as the American battle-ships are.

The American armored cruiser "New York" may be profitably compared with your cruiser (practically, though not nominally, an armored cruiser also), the "Blenheim," which is about five hundred tons heavier. The speeds are very little different; so far as protection is concerned, the "New York" is defensively much the stronger of the two, and in the matter of armament the "New York," regarded as a fighting ship for general purposes, or as a scout, or as a commerce-destroyer, is strikingly the better craft. Here, side by side (exclusive of machine guns), are the guns, with their aggregate muzzle energies, of the two vessels:

NEW YORK.		BLENHEIM.	
Guns.	Total Muzzle Energy. Foot-tons.	Guns.	Total Muzzle Energy. Foot-tons.
6 8 in. B. L.	48,066	2 9.2 in. B. L.	21,820
12 4 in. Q. F.	10,980	10 6 in Q. F.	24,570
8 6 pr. Q. F.	1,248	16 3 pr. Q. F.	1,280
4 1 pr. Q. F.	54		
30	60,348	28	47,670

But this statement, taken alone, by no means shows the disparity between them. The bow and stern-fire—most important factors in the efficiency of cruisers—are immensely superior in the "New York." That ship can bring to bear upon a point directly ahead of her four 8-inch, six 4-inch, four 6-pounder, and two 1-pounder guns, or in all sixteen guns, developing in the aggregate a muzzle energy of 38,185 foot-tons. The "Blenheim" can bring to bear on a similar point only one 9.2-inch, two 6-inch, and four 3-pounder guns, or in all seven guns, developing in the aggregate a muzzle energy of but 16,144 foot-tons. So that while the "New York" can bring much more than half her superior gun-force to bear right ahead, the "Blenheim" can bring little more than one-third of her inferior gun-force to bear in the same direction. Equally unfavorable to the "Blenheim" would be found a

comparison of the stern-fire of the two ships. For broadside-fire the "New York" has available five 8-inch, six 4-inch, four 6-pounder, and four 1-pounder guns, with an aggregate muzzle energy of 46,223 foot-tons; the "Blenheim" has two 9.2-inch, five 6-inch quick-firing, and eight 3-pounder guns, with an aggregate muzzle energy of no more than 34,745 foot-tons. And the "Brooklyn" is as superior to the "New York" as the "New York" is to the "Blenheim." But for lack of space I would go further and compare the American "Columbia" with your "Gibraltar" (which, though two hundred and twenty-five tons heavier, is about four knots slower), the American "Olympia" with your "Talbot," and so on. It would, however, lead in each case to the same conclusion, which, briefly stated, is that, matching craft of approximately equal displacement, age, and class, the American ships are, as all-round fighting- and scouting-machines, better than yours by from fifteen to forty per cent.

You, in Great Britain, have been building steel or iron battle-ships and cruisers in a score of yards for thirty-five years past. You have been accustomed during all that period not only to design these vessels, but also to construct them step by step from the raw materials as furnished by nature. Your resources are old-established; your experience is mature. The United States has been building steel or iron battle-ships and cruisers in, at most, half a dozen yards for not more than twelve or fourteen years. During all that period grave difficulties have had to be contended with. At first, resources had to be discovered or created, and there was but little experience. Yet to-day the United States can build and arm a battle-ship or cruiser without applying to the Old World either for advice or for help, and, moreover, build it weight for weight a better fighting vessel than you. Your constructors may challenge this statement. Let them submit the question to an unprejudiced arbitrator, and let him take into consideration design as well as workmanship. The verdict will be against them. Indeed, America has never before demonstrated her strength and energy so astonishingly as she has demonstrated them in dealing with the problems which rose up before her when she discovered that she needed a modern navy. Yet this is only one of the many signs which seem to show that if you in England would look to the continuance of your maritime supremacy, and to the future security of your scattered empire, you should lose no time in coming to an arrangement with your giant cousins in the West. They are your only natural allies; they will be your most formidable rivals in manufactures and sea commerce. You can now make it worth their while to combine and stand side by side with you in good and evil forever, for your day is not yet past; but if you delay the full reconciliation until they have learnt to feel their colossal strength, they may treat your advances with indifference.

By way of further showing how marvelously rapid have been the

recent developments of some of the naval industries of the United States, I may say here that up to 1890 the country contained no plant for the manufacture of armor for battle-ships; that up to 1891 it had no facilities for making a Whitehead torpedo; that up to 1889 it did not possess the appliances for the building of a modern heavy gun; and that up to 1890 it could not produce an armor-piercing shell. Armor, torpedoes, guns, and projectiles are now manufactured in all their varieties, and in as large quantities as need be desired, and in the matter of quality each can compete on favorable terms with the products of any country. In the mean time the young corps of naval-constructors have become highly efficient, the Naval War College has been established, and has done work from which the whole world derives profit, a naval militia has been organized in most of the maritime States, the methods of departmental administration have been improved, the construction of large engines has been successfully undertaken at some of the government navy-yards, and numerous other reforms have been introduced.

The officers of the navy continue to bear the character which they have borne ever since the United States first had a navy. They are the worthy successors of the Biddles, Whipples, Hopkinses, Rodgerses, Truxtuns, Stewarts, Bainbridges, Dales, Barrons, Perrys, Hulls, Decaturs, Macdonoughs, Lawrences, Porters, Tatnalls, and Farraguts of the past. But in addition they rank, beyond doubt, among the best instructed, most scientific, and most generally competent officers in any service, and the good American practice of making each of them a specialist not in one subject but in all renders them efficient and resourceful in an unusual degree. Unhappily, owing to the large number of entries during the War of Secession, the officers' list is terribly congested, and promotion is in a most unsatisfactory condition. The rear-admirals range in age from sixty to sixty-two, the commodores from fifty-six to sixty-two, the captains from forty-nine to sixty, the commanders from forty-seven to sixty, the lieutenant-commanders from forty-five to fifty-eight, and the lieutenants (senior grade) from thirty-five to forty-eight. Nay, there are junior lieutenants of thirty-nine and ensigns of thirty-six. The mean age of each rank is, I imagine, from ten to fourteen years greater than that of the mean age of each corresponding rank in Great Britain, and from eight to ten years greater than in France, and it speaks volumes for the spirit and keenness of the service that officers whose prospects are upon the whole so disheartening should, nevertheless, not only stick to their profession, but vie with one another in adorning it. As in Great Britain and France, long-continued family associations with the navy are quite common. I have mentioned above a number of names which won distinction in the old United States navy. More than half those names are now winning distinction in the new.

As for the men, they are, as they have ever been in the United States navy, of all nationalities. But their officers speak very well of them, and they are capable of and usually attain a high degree of efficiency. Good officers can make good men out of any healthy and intelligent material, and in the United States navy the men seem to be formed and moulded by their officers more, perhaps, than in any other service. All which is testimony in favor of allowing officers to train men rather than of sending men ready trained to ships where, in consequence, officers incline to forget that the purely educational are not among the least important of their many duties. The American system can and already does produce good results, although there is a desire to attract a larger proportion of United States citizens and to enlist men for longer periods than at present.

It is curious to note how things act and must react one upon another. The general feeling of the United States that a modern navy of some kind must be created, combined with the bias of the country in favor of home industries, has led to the establishment, or to the fitting with modern appliances, of such private yards as those of Messrs. William Cramp & Sons at Philadelphia, Mr. John Roach at Chester, the Union Iron Works at San Francisco, the Bath Iron Works at Bath, the Columbian Iron Works at Baltimore, and the City Point Works at Boston. The demand has also, as has been seen, brought about the establishment of gun-factories, rolling-mills, torpedo-factories, and powder-factories,—in the founding, in fact, of a number of new industries. These new industries are all now seeking outlets. When not working for their own country they are anxious to be working for other markets, and already many of them are so working. Transport to other markets for the new products is most naturally provided by vessels built in the new or modernized yards. Some of it is already so provided. More will be in the near future. And so the revival of the United States navy is being followed by a revival, less marked yet not less real, of American trade in American bottoms. As this trade, which was once so great as to threaten the mercantile preeminence of Great Britain, continues to revive, American interests in the outside world will increase, and to protect them the United States navy will be increased proportionately. As that navy grows and cruises farther and oftener afield, coaling or dépôt stations in distant seas will be needed, and the United States will be confronted with the necessity for abandoning a merely American policy and for assuming its true position as a great power. The country cannot now hang back; it must go forward to its destiny, which is a magnificent one. Then, unless there be in the mean time some arrangement between you, your interests and those of your American cousins will begin to directly conflict in all parts of the world, and when that conflict comes, it will not be your cousins, already sixty-five millions strong, who will go to

the wall. Big as the United States is, and populous and rich, it is only as yet in its infancy. Even from the mere point of view of worldly policy there is much wisdom in the scriptural advice to "agree with thine adversary quickly while thou art in the way with him." You need not contemplate your future relations with the United States as being likely to be otherwise than peaceable, nor suppose that the United States will ever be anything more hostile than your commercial rival. Nevertheless you may take to heart and apply the counsel. To-day you cannot only render the United States and yourselves great service, but can also, in all probability, insure the future harmonious action of the race to which you both belong. To-morrow the United States may be, in all senses of the words, too independent to care much whether you wish her well or ill. A little imagination, a little healthy enthusiasm, a little natural affection, a little repression of jealousy, a little foresight might, I verily believe, now carry you, side by side with your American cousins, to a future grander than you suspect, and might benefit others as much as yourselves, but a few years hence it may be that the opportunity will have departed forever.

Does not a vision mount up sometimes before your mental view? Do you not, gazing far above the trivialities and envies of the moment, occasionally catch glimpses of something great and splendid beyond? Do you think that Americans do not see it too? Surely there is a vision of the strong, warm hand of brotherhood extended, of the two powers again united yet always independent, of mutual help for right, progress, civilization, and peace, and perhaps even of the whole race, as loyal to and as proud of some common flag as each branch of the race now is, and ever ought to be, loyal to and proud of its own separate one.

I think that the happy future of Great Britain, of the United States, and of the out-lying British empire depends upon the realization of such a dream. I think that the accomplishment of the Anglo-Saxon mission in the world depends upon it. I think that civilization and peace would profit by it. Nor do I know whether the British empire or the United States would be the greater gainer. The former would acquire with the intimate alliance new strength and new moral resources. The latter would acquire healthy world-wide interests, and would feel for the first time in its independent history that while the justice of its old attitude towards the mother country was fully recognized, the daughter country's lawful heritage of tradition and glory was as completely admitted.

Such, it occurs to me, is, in the merest outline, the lesson to be derived from the visit of the "Chicago" to your waters. That visit has directed your attention, as it had not previously been directed for many years, to the subject of your kinship and relations with the great Anglo-Saxon Union of the West. It has also, thanks largely to the

fact that the "Chicago's" captain is Alfred T. Mahan, reminded you that you are not alone among the nations in appreciating the importance of sea-power, and that in the number of those who most thoroughly appreciate it are the sons and grandsons of the men who, eighty years ago, when you seemed to be all-powerful and they ridiculously feeble at sea, made you fear for your maritime supremacy and forced you to admit that the United States navy, which you had believed to be "contemptible," could deal you blows such as neither France nor Spain had ever been able to inflict.

And if the lesson be as I have indicated, surely it is not really a very difficult matter to carry it into action. Selfishness, jealousy, and suspicion may, of course, block the way; but if I recollect rightly, it is not the habit of the men of your race to be sectional, egoistic, or petty when great questions involving the interests of all of them are at stake. You may call to mind the apparent diversity of interests in England, the mother of all of you, in 1588, and how the fact that a Protestant government and a Roman Catholic opposition seemed to be then unable to agree upon any problem, encouraged a Roman Catholic power to attempt the invasion of the island and to count upon the assistance of the Catholics. You may call to mind, too, how, as if in an instant, Protestants and Catholics remembered that they were all of one stock, and how a Catholic nobleman, Lord Howard, of Effingham, at the head of Catholic as well as Protestant captains, led the fleet which scattered the Armada of Spain. The recollection that still you are all of one stock may yet win for you Anglo-Saxons even greater triumphs.

NAUTICUS.

ITALIAN LABORERS.

WITH the coming of these laborers of a Latin race to the United States many new conditions were presented to the employer and observer, as their language, style of dress, mode of living, bearing, and temperament were in every respect distinct from other foreign laborers, all previous immigrants, with the exception of a few Frenchmen, being of Saxon lineage or disposition.

Italian peanut-men and organ-grinders for thirty years have been familiar sights upon the streets of our cities, but it was not till after 1872, and then only to a slight degree, that the Italian entered the ranks of labor as a competitor for employment against the American, Irishman, and German. In 1880, however, they began to arrive by the ship-load, and for twelve years have continued to come among us at the rate of fifty thousand annually, but since 1892 the immigration has fallen to about thirty-five thousand a year. The Italian immigrants now in the United States number over six hundred thousand, eighty thousand of whom live in New York City, and twenty thousand in Philadelphia, but the number of Italians in the United States is not so large as in South America, as there they number nearly one million, and, unlike the immigrants here, assimilate quickly with the natives, people of Spanish and Portuguese lineage, and of like temperament.

The writer has employed Italian laborers on a large farm since 1873, then being forced by the desertion of Irish laborers to go to the Italian consul in Philadelphia and apply for fifty men; he got thirty who that day had arrived by an emigrant ship. They could not speak a word of English, but were piloted by an interpreter to their place of labor and dumped down in a large two-story house of many rooms, given grain-sacks for bedding, and crackers and cheese for their first meals. They selected from their number a caterer, who at first had to be assisted, but who with remarkable aptitude became a skillful purchaser.

The men arrived one afternoon and went to work the next morning, immediately astonishing their employers by their aptitude as copyists of unfamiliar labor, eagerness to please, docility and good manners. Since that day the farm force has frequently comprehended over one hundred Dagos, as they are satirically called, working to the perfect

satisfaction of their employers. Without them operations on a six-hundred-acre Pennsylvania farm, under intense cultivation, would have had to be curtailed fifty per cent., as the Irish and German immigrants have ceased to be a factor in the labor market, and the American will not become a day-laborer on a farm, railroad, or street if he can help it. The experienced employer don't want him as a laborer, for he is usually found in the rear of any gang. He will occasionally be a plow-man, oftener a teamster, but his ambition is to be a boss of a gang, or an employee in a town or city, where he can engage in work not strictly laborious. In this respect he is to be commended if he improves his condition, but his course diminishes the laborious force, which diminution has to be made up from some other direction. The Italian now is the man who, in the North and East, does considerable of the laboring work on farms, and almost exclusively digs canals and cellars, and constructs and repairs railway embankments and tracks. He, or a better or worse digger, is a positive necessity up to a certain extent; contractors of rough work cannot do without him unless they get men of another nation, and as the Danes, Scotch, Irish, and Germans have almost ceased to emigrate, he is by all odds the next best, far to be preferred to the Russian, Pole, Hungarian, or the peasant from south of the lower Danube.

The Italian, as a man of the distinctive Latin race, does not assimilate with Americans as quickly as foreigners of Saxon blood, whose language and habits are more like our own, and again, because he is forced to take the defensive the moment he places his foot upon our shores. Foreigners here before him are opposed to his competition in the labor channels, they, and Americans too, oppressing him; he consequently has found it in cities convenient to settle in communities for mutual protection and society, and as a consequence of such conditions he retains the old country habits of squalor, and is slow to learn our language. Removed from the evils of colonization and brought into close contact with Americans, he becomes a different man, adopting American dress and habits of living quite as thoroughly as did the Celtic laborer of forty years ago.

After twenty years' experience with Italians as farm hands in Pennsylvania and New Jersey, much longer in Virginia with negroes, several years in Wisconsin with Polanders and Hungarians, the writer can say that he can take one hundred, or any given number of Italians, and at rough work successfully match them against the same number of any other nation, and with kindly treatment get more work out of them on a farm than from any of their labor competitors.

While they subsist almost entirely upon farinaceous foods they are capable of intense and long-continued exertion, and they continue at it in good humor. They are too anxious to work to idle or quarrel with anybody, and they never fight, although many Americans believe that

every Dago has a stiletto up his sleeve. This is a mistake, though they do all carry knives, with big blades too, but the knives are used to cut their bread and cheese, and meat when they have it. None of them at home, and few of them here, have been educated to the use of a table-knife and fork, their pocket-knife with the long blade serving for both purposes. When attacked it is only natural they should make use of it, the only weapon they can afford to possess; an American thug carries a revolver, a weapon far more dangerous, as if his bullet does not kill a principal it may kill a bystander.

Like all nations they have bad men among them, and like all European nations the Italian authorities undoubtedly encourage its bad men to go to America, consequently among the emigrants are many who should have been hung or jailed for life, but for that we should not condemn the whole race. The writer, after employing many thousand Italians, can say he has never had an Italian employee incapacitated during working hours by drink. Some get drunk on Sundays, but very few, considering their ignorance and their opportunities. A far greater number here, however, than in Italy, consequent upon a bad example set them by those who claim to be their superiors. Being sober men quarrels are not started, the writer being unable to recall one fight, not even a bloody nose. Previous to the employment of these people Irish were the laborers, and it was dull, something was wrong, if there was not a fight every day.

These statements are not the inexperienced jottings of an essayist, but drawn from the field observation of a large employer, who, while ready to admit the objectionable traits of the Italian, wants to call attention to his good qualities, and ask for him better treatment at the hands of educated Americans at least, if not from his bosses and competitors in labor gangs. It cannot be doubted by any observer that he is treated far worse than the Chinaman, because his labor occupations place him in a position to be abused. He is decried by the educated, stoned and hounded by laborers of other nationalities, run down in the street by truck-drivers, cheated by gang bosses of the railroads, streets, and public works, and made to pay premiums for employment. Gangs of them on railroads are spoken of as cattle.

To particularize upon the subject of wage premiums, the writer will state that he lives upon the line of a prominent railroad, and is familiar with the course pursued as respects the road-bed laborers and track-repairers, all Italians, who work in gangs of ten to twenty. This company ignores the practice of its section bosses in demanding premiums for employment, ten and twenty dollars being a frequent payment extorted from these poor people, sometimes twenty-five dollars being exacted, and it does not stop here, for the bosses demand an additional payment of one dollar per month from the laborers to insure their continuance on the pay-rolls. Many cases have been brought to the

writer's notice where Italians have been paid for time never put in by them, the money stolen from the company being divided between the laborer and the boss,—this not the conception of the Italian but of the bosses, and worked by them upon threatened discharge if the laborer does not comply. Thus he is at once induced to become a rogue. All this is consequent upon his inability to speak English, and because of the limited field of labor open to him. Like sheep, they all want to do one thing and to work together, and thus competing, cheapen their own labor and open themselves to gross imposition.

They are the most money-saving and frugal people among us; an ordinary laborer on farm, street or railway receiving from one dollar to one twenty-five per day saves one hundred to one hundred and fifty dollars a year. Living at less cost, they consequently can sell their labor cheaper than men of the northern nations, who must have stronger food, better clothing, better housing. It is in their frugality and consequent ability to work cheaply that they give offense to Saxon races, and possessing less labor attainments they must labor cheaper to gain employment. Fully half of their wages they save, as the desire of all Italians seems to be to accumulate cash that they may send it abroad to bring their friends to this land of high wages and freedom from military service. A laboring man getting, say six to seven dollars a week, pays, if a single man, for bed and washing about fifty cents per week to the tenement housekeeper, who gives floor-sleeping space to seven or eight in a room; the laborer's food, cooked by himself, costs a dollar and a half per week, making an expense of two dollars, at first sight cheap, but extravagantly dear, considering the miserable quality of lodging and food obtained. For clothing, he buys during the year two seven-dollar suits and two pair of shoes at a dollar and a quarter, doing his own half-soling, the soles being purchased at Italian stores and put on with hammer and nails. Married men with families of children cannot save like single men receiving the same wages. They spend twelve to eighteen dollars per month in store bills for food and clothing, their wages possibly averaging twenty-five to thirty dollars per month, of which four dollars go for rent, next to nothing remaining for a rainy day. Not one in twenty owns a clean suit for Sunday, and some go entirely without coat of any kind, always in shirt sleeves summer and winter, putting on or taking off undershirts to meet the conditions of temperature, and wearing the same cap all the year round.

The Italian lives principally on macaroni, bread, and beans, sometimes a piece of meat on Sunday, sometimes a little Italian cheese, for which he pays twenty-eight cents, saying American fourteen-cent cheese is not strong enough. Perhaps, occasionally, he eats an Italian sausage made in Chicago. He smokes a good deal, but never chews until his

education has been improved by American associations; neither does he swear in the old country; but here, after consorting with railway bosses, he becomes exceedingly proficient.

Newly-arrived men uniformly salute their gentlemen employers by taking off or touching their caps, and the particularly better bred continue to salute; but nearly all adopt the familiarity of a nod as a mode of salutation, taking their cue from the many uncivil Americans whom they see about them, a bad lot to copy after, for the laboring American, especially the Irish-American, possesses the least politeness of any man of civilized nations; he has a notion he is as good as the next man and somewhat better.

The Italian in America is never a beggar except for employment, and though beggars for money over-run Italy, none such are met here. Like Jews, no Italian tramps are seen upon the road, and comparatively few Italian cases come before our criminal courts. All are too intent upon making money to waste time upon voluntary idleness. Often when asked why they did not indulge occasionally in a song, they have replied they had not time to sing, too busy making money.

When unfortunately idle or without money they are generous one to the other, and take care of their own as well as other nationalities. No complaints are ever heard from them; if not satisfied they just get up and go. During the late depressed condition, when so many people were holding out their hands for public aid, what proportion of the subscription went to the Italians?—next to nothing; consequent upon their ability to live at very little cost, and because of their accumulative habits.

The Italian is an honest man till demoralized by contact with bad associates here; and to illustrate his honesty will remark that, on a farm of six hundred acres, where over one hundred men are employed over widely-separated fields, it is impossible to guard against occasional mistakes in the record of time broken by rainy weather, and consequently men are sometimes over-paid as well as under-paid a quarter of a day. Of course the under-paid are quick to report an error, but the over-paid are quite as prompt in returning the excess in cash to the last cent, and they are the only people who have so proved their natural honesty.

As a rule, the Italians who come to the United States are from Southern Italy; the Northerners, stronger, better educated, and a far better agricultural class, because of the broader and more fertile plains upon which they are brought up, go as laborers in droves into Austria, France, and Germany, and a larger number to South America. The Southern men, on the other hand, from a country much cut by mountain ranges, have most of them had limited agricultural practice, and consequently, unfamiliar with the management of horses and machinery, are forced upon arrival here to adopt the shovel and pick as their instruments of labor.

While the Italian, northern or southern, is without question more desirable than the Pole, Hungarian, or Slav, we, as a people, have for the present enough of the peasant class, as a continued immigration on a large scale will further congest the labor market, reducing wages, not only of themselves but of others, and debasing the domestic tone and status of the nation. Working for a minimum, they cannot be expected to develop much improvement in domestic life, but to continue in their poverty-stricken and old country ways. Consequently further immigration of the peasant class should be positively prohibited while giving all protection, rights, and opportunities to those now here. They cannot be sent back; the only recourse is to educate them in cleanliness, even if it takes a policeman's club to do it. Over half a million in the country is now quite enough till we Americanize a little, otherwise an American will soon be a curiosity. He is now in many Western towns. Further immigration of these people is, however, likely to stop, for the reason that Congress, if it can muster courage to do its duty, will probably pass stringent laws controlling immigration in general, because of the reports of ill usage sent home by laborers now here, and because the Italian government is about to take steps to stop its people from leaving the country, wanting the men for the army reserve. The possibility of a call to military service is one reason why many Italians emigrate. Conscripts and all men must do military duty, serve for thirty months for the munificent pay of thirty-six cents a day, thirty-four of which are knocked down by the government to pay for clothing and food, while two cents a day are given to the soldier to be sent to his wife, or, if he be a single man, for spending money. In passing, it may be remarked that while all the young able-bodied immigrants have done military duty, no class of men carry with them so little of the appearance of a soldier's training.

Emigration unrestricted from Italy might continue at a greatly-increased rate for many years, for though the kingdom has a territory thirty-three times less in area than the United States and less than half of Texas, it has a population very nearly equal to half that of the United States. The emigration by Italians has been to a great extent promoted by the agents of steamship lines, who are located in every town, and who paint in glowing colors the opportunities offered to settlers in the United States, and the high wages, not hesitating to tell the peasantry, accustomed to receive one franc a day, that they can readily obtain a wage-rate of eight to ten francs a day, just as the ship-agents in Ireland told the Irish that they could pick up gold dollars in the streets of America.

It is a mistaken idea that all Italians go back to their own land. Many do, quite twenty thousand a year, mostly single men, but of these fifteen thousand return after seeing their relations and friends, and generally they bring back wives. Many laborers who work

during the spring, summer, and autumn months go back to Italy for the three months of winter, because they can pay their eighteen dollars passage money each way and their board at home at little additional and save cost over that of living here while out of employment, while they have the pleasure of being again among their own people. Any one who has visited a foreign country can sympathize with these poor creatures in this desire to be again among their own.

Drones once back in Italy may remain, but the active and industrious man, one who has once experienced the greater freedom of this country and profited by its higher wages, likes mountain air or an exhilarating drink, wants more of it.

Those married men who are settled here do not send their money back to Italy, but invest large amounts of it in interest-paying institutions, building associations, and in other property. They do not want to go back to Italy to live, but to secure to their children the privileges of American institutions. The money sent to Italy is by married men after their wives and children, by single men after their sweethearts, and they come quickly upon demand. There has been a good deal of criticism indulged in upon the assumption that these people send all their money to Italy,—an unfounded assertion, for few of them ever expect to resume citizenship in their native land. The money they send abroad is nothing compared with the twenty millions of dollars annually spent in Italy by American tourists.

Those who succeed in accumulating money start in various businesses depending upon their educational acquirements; some who were laborers at first are now bankers, money changing being a favorite occupation, others macaroni manufacturers, bakers, wood- and stone-carvers, grocerymen in Italian colonies, others fruit dealers and wine merchants, but they do not drive street-cars, nor act as brakemen, nor do in-door work, nor do a hundred things which men of other races seem to monopolize.

As the immigrant Italian and his American-born sons for the next twenty years will probably continue to be the navy of this country, a knowledge of their language becomes, if not a necessity, certainly an advantage to those who will be called upon to employ them. Such a knowledge by an American gives him almost unlimited control over them, as they are so helpless and so much like children. The storekeeper who acquires Italian will get their custom; the doctor who speaks it is alone able to administer to them during sickness. An American who acquires the language, if he learns it under favorable conditions, can speak, even in a broken way, quite as well as the ungrammatical patois of the immigrants who from a large number of provinces show a great variation in the use of words, construction of sentences, and intonation. While the writer admires much in the Italian laborer and owes much to him, he is not insensible to glaring

faults. One noticeable deficiency, so distinct from the Irish, is a want of religious training and impulse. In this country not five per cent. of them go to church, saying that they are mostly single men having no domestic ties; that they cannot understand the priests; that they will not be continually solicited for church money; that the churches are full of Irish, and they will not associate with them, as the Irish call them "haythens" and "nagurs." In the knowledge of the writer the Irish have been known to eject Italians from the vestibule of a church into which they were too timid to enter. One of the writer's Irish servant-girls, speaking of them as "haythen," was confounded when told that the Pope of Rome was an Italian, and that the administration of the Roman Catholic Church was largely controlled by Italians, and always would be. As a class, they are only too glad to get out of the observation of the priesthood, for, as a nation, the Italians are the most irreligious of any of the Mediterranean people,—a singular condition, considering Italy as the home of the Roman Church. The educated men at Rome seldom go to church, having a saying that they "live too near the sun." While the population of Italy is about thirty millions, and while all except about one hundred thousand Protestants are Roman Catholics in name, not over one million are probably true Catholics. Officers of the army and navy never go to church, except it may be to see the girls; the leading politicians and statesmen never go, except to make a show for political effect. These men work the church as a political machine. Under such examples what more could be expected at home from the peasants, and still less now in this country, as they are out of the observation of the one hundred thousand priests of Italy.

Here in politics, as a rule, Italian laborers hostile to the Irish Catholics, naturally take the opposite side, and become Republicans; and under a little persuasion nine-tenths of them could be turned over to Republicanism as they could be to Protestantism. It is an open field for proselyting of great promise, both religiously and politically.

There are societies for the prevention of cruelty to children, and others for the prevention of cruelty to horses, cats, and dogs; another is now needed to prevent cruelty to the laborer of whatever nationality, to protect him from the cupidity of contractors and the cuffs and frauds of the gang bosses, for as a nation we seem in many things to be approaching European conditions, but in nothing so much as in the herding of labor and its inhuman control. The Huns of the mining region of Pennsylvania, if treated like human creatures, would not be so expensive to the State. It is quite true that by their ignorance foreign laborers bring about these conditions, but Americans should endeavor to ameliorate their condition and improve the moral and domestic instincts of the foreigners among us, for much as we strenu-

ously oppose their further immigration, we have them now in our midst, and most of them are here to stay, consequently it is only by education in all the conditions of life and practice and in the untrammeled enjoyment of human rights that they can be improved.

In Southern Italy particularly peasants can find but few pursuits, agriculture being very little developed over that of a century ago, the hours of labor all the year round being from *sun up* to *sun down*, and the payment of labor for the longest day being but twenty-five cents, often as low as fifteen. Consequent upon these conditions the Italian in America, until broken in, can do little more than use the most primitive tools. He cannot plow, for in his country little plowing is done, and that generally by oxen; he cannot drive a team of horses, for he has never had practice; he cannot drive a mowing- or reaping-machine for the same reason; and he cannot learn to handle machinery because he does not possess a mechanical mind. Thus he becomes a shovel-man, and as such is worked in gangs, his name, hard to pronounce and harder to spell, is dropped entirely, and he is given a number like a convict and sent to a gang, where often he is treated less like a man than the negro of the South; in fact, he is treated like a galley-slave. So anxious are they to make wages, that there prevails a spirit of unrest that leads them to a constant change from one employer to another, in search of higher pay or a steadier job. Railway work seems attractive to them, possibly for the reason that they are permitted to smoke all the time, which unworkman-like liberty private employers will not allow, and possibly because they are allowed to loaf much of the time, no class of employment being so demoralizing as railroad work, where the effort of the old hands seems to be to do a half-day's work for a full-day's pay, and where they know the gang-bosses are always on the make, following the bad example of some of their superiors. Another serious fault to be found with these people is overcrowding in their houses. This seems perfectly natural to them, for, if permitted, they continue the practice as well in the country as in the city; but it must be remembered it is not a habit common alone to the Italians, for it is the same with all Latin and Oriental races, as the Spaniard, Southern Frenchman, and Sclavonian. The writer has been in many cabins of the French peasantry where frequently, in an earth-floored room not over eighteen feet square, a dozen bunks were arranged around the walls like old-style bunks on a steamer, the room serving equally for bed-room, living-room, and kitchen, and in Italy the same mode prevails. Poverty is the first cause of such a system, the custom of generations the second cause. Their houses are more durable than the log cabins of our Southern negroes, but not cleaner, and in the South only one family is found in a cabin; in Italy often two. Brought up under such domestic conditions, ostracized by laborers of other nationalities, unfamiliar with our language, is it any

wonder that they adhere to their half-civilized habits of herding together for companionship and safety?

Our legislators and municipal authorities should meet this question of overcrowding by designating the number of inhabitants to a given area of house space. Like other foreigners, he grows restive when isolated, but isolation is best for him in the end, as then he naturally drops his old-country methods and adopts what he sees around him as evidently better than his own practice. He is an apt gardener, and horticulture on small tracts offers him a desirable occupation, consequently he is already in many respects fitted for country life. At Hammonton, New Jersey, there are one hundred and eighty Italians who have become land-owners and fruit- and grape-growers for wine. These men possess farms ranging from ten to one hundred acres, averaging twenty-five acres, on which they have paid much of the purchase-money, and in spite of two very disastrous seasons they have paid interest on mortgages, kept up their dues in the building associations, and held their own in other respects. They have proved themselves industrious, patient, and persistent workers. They have much improved in their domestic conditions, but, being poor and having to devote all effort to money-getting, have not made any attempt to beautify their grounds. Their children go to the public schools and are bright and compare favorably with the best.

The most offensive characteristic of the Italian laborers is their want of cleanliness. They are neither godly nor cleanly, but what can be expected when they live in communities and in tenement-houses packed like sardines? They seldom wash, never undress at night,—some never take off their clothes from one year's end to the other,—consequently their houses are filled with vermin, though some families are met with whose houses are the perfection of cleanliness. These uncleanly ones are mere animals with some human qualities, but even then they are several degrees better than Hungarians, Poles, or Servians, and not so bad as our North American Indians.

A foreign custom not altogether commendable is the making of marriages by parents, daughters being given to the suitor who has the largest "dot" to hand over to the father of the bride. Sometimes the parents keep all the "dot," sometimes half of it; at other times they settle it all upon the girl. Under proper conditions this may be an improvement upon the system pursued by certain American millionaires who give their pretty and delicate daughters, with a half million dollars thrown in, as a bride to impecunious English lords or to beastly Continental barons.

The Italian peasant woman is inferior to the man, as she has received less education to commence with and has less knowledge of affairs. She is very low in the scale of humanity, and, as seen upon our city streets carrying head-burdens of eighty to one hundred pounds

of waste wood, she seems perfectly satisfied to reduce herself to a mere animal burden-bearer. She unsexes herself by such unwomanly labor, and has introduced an unfamiliar sight and a very disagreeable and distressing one, and yet Italian women are more moral than either the French or Spanish.

It should not be inferred that all Italian laborers are ignorant men, for nearly every boy in all their cities, and in both city and country in the northern provinces, receives as good a public-school education as the ordinary American country boy. Their school system since 1880 has been compulsory; children must either attend a church or state school or the parents are subject to fine. In the mountainous districts the school advantages are not as good as upon the plains, consequently the mountain men are the least educated. But not speaking English, many partially-educated men emigrating to this country have become laborers; such men, however, learn quickly, and have of course bettered their condition. Laborers of fifty years of age can seldom read, but nearly all the young men can read and write fully as well as our American country population, often better. With us in the United States, while the public-school system of cities and towns is very thorough,—often entirely extended too far,—education in the rural districts has not developed in keeping with the age, illiteracy being far too common among Americans,—even those whose ancestors were Americans one hundred years ago. It is a public shame how many Americans cannot write their own names. The people of the cities do not half appreciate the degree of illiteracy in the country. To illustrate, the writer has in his employ nineteen American plowmen working on a Pennsylvania farm situated on the main railroad line between the two great cities of Philadelphia and New York, and yet out of these nineteen men six cannot write their names, and in spite of frequent admonitions some of them are bringing up their sons in like ignorance. Could a stronger argument be advanced in favor of compulsory education? This thirty per cent. of partial ignorance is not abnormal, for the men referred to are picked men.

In the Northern States of Italy the illiteracy twenty years ago was thirty-four per cent.; now it is only five per cent. In Southern Italy illiteracy was eighty-four per cent.; now it is only fifty-four per cent., while in the cities it is under five per cent.

The Americanizing of the children of Italians will not be so rapid and complete as in the case of the children of Germans, Swedes, or Danes, for it will take a second or even a third generation of American progeny to procure the same degree of assimilation, for the Italian, being of the Latin race, is as distinct from the Saxon as are the olive-trees of Italy from the pines of Germany. But under the miraculous evolution of species in this country, consequent upon the political social, religious, and climatic conditions which surround men here

conditions which not only Americanize them mentally, but even alters their expression of countenance and physical bearing, the grandson of Italian immigrants will in a hundred thousand cases become thoroughly Americanized, and while Latin in lineage, their black-eyed brunette daughters will in time marry men of Saxon pedigree, and there will be developed a new subtype of man and woman, the handsomest, most poetic, most musical, most artistic of all gone before. This is not an idle dream, for it must not be forgotten that thousands of our best people to-day are descendants of Irish peasants and German boors quite as low in intelligence as any Italian immigrant who ever handled a spade or pick.

BURNET LANDRETH.

ORIGIN AND DEVELOPMENTS OF STEAM NAVIGATION.

(Continued from page 181.)

1837.—ATLANTIC STEAM NAVIGATION.—The *Edinburgh Review*, in 1837, in a long article on steam navigation across the Atlantic, which was attributed to Dr. Lardner, maintained that until further improvements should be made in the construction and management of steam-vessels, or the economy of fuel, it would be impossible, as an ordinary thing, to make a continuous voyage from New York to Liverpool, and especially from Liverpool to New York. The New York *Journal of Commerce*, in June, 1837, referring to this article, approved of its conclusions, and supported them in a long article, concluding, "Whatever difference of opinion may exist as to the practicability of an Atlantic steam voyage, it must be admitted upon all hands that its extent, for an uninterrupted run, comes to the extreme verge of the possible powers of steam navigation." "To be successful, the nearest points of approach to the Eastern and Western continents should be chosen as the points of arrival and departure, to increase the probabilities of success."[1]

The London *Nautical Magazine* for March, 1837,[2] says, "The time is fast approaching when the famous prophecy of the Rev. Dr. Dionysius Lardner, delivered in Dublin and redelivered in Bristol, 'that it is as easy to go to the moon as to go direct from a port in England to New York,' will be tested. There are two vessels at present building to run direct from Bristol and London to New York. The Great Western Steamship Company is building a vessel at Bristol, which will probably make her first trip next August. She is intended to carry twenty-five days' coal. The British and American Steam Navigation Company, of London, have contracted for a vessel of seventeen hundred and ninety-five tons. This, the largest steam-vessel ever yet propelled, will have a capacity for twenty-five days' fuel, eight hundred tons measurement goods, and five hundred passengers. We sincerely wish both the Bristol vessel and the London one all manner of success;

[1] See *Army and Navy Chronicle*, June 29, 1837, for the *Journal of Commerce* articles and several others.

[2] See also *Army and Navy Chronicle* for April 13, 1837.

and when we reflect that sixty thousand people have landed at New York from January 1 to September 1, and twenty-seven thousand in Quebec last year, the increase that will naturally take place when the passage is shortened to *fifteen* days instead of *thirty-seven*, the present outward average of the New York packet-ships, we do not think that any of the numerous plans before the public hold out stronger inducements to the capitalists.

"It is difficult to calculate the natural benefits that will accrue to both countries by the establishment of steam communication between them. This much we may affirm, it will greatly improve both countries and render perpetual the peace that now happily exists between them."

1837.—THE FIRST STEAM-WHISTLE.—The first steam-whistle used upon a steamboat was on Narragansett Bay, Rhode Island, upon the "King Philip," Captain Thomas Borden, running between Fall River and Providence, in 1837, by Stephen D. Collins. He is still (1882) engineer of the "Canonicus," of the same line, having been in service forty-five years. Having seen a whistle on a locomotive, Mr. Collins ordered one to be made for the "King Philip." It was not liked at first, but its usefulness as a signal led to its rapid adoption.

1838.—STEAMBOATS IN UNITED STATES WATERS.—A letter prepared by the Secretary of the Treasury of the United States, in answer to a resolution of inquiry of the House of Representatives, 20th of June, 1838, communicated many interesting particulars concerning the employment of steam-vessels in the United States, and the accidents that had happened to them.

"The number of accidents resulting in loss of life or much injury to property from the use of marine steam-engines of every kind in the United States is computed to have been about 260. Of these, 253 are ascertained, and the rest are estimated. Accidents, by explosions and other disasters to steamboats, appear to have constituted a great portion of the whole, and are estimated to have equalled 230, two hundred and fifteen of which are ascertained. The first of these is believed to have occurred in the 'Washington,' on the Ohio River, in 1816.

"Since the employment of steamboats in the United States it is computed that 1300 have been built here. About 260 of these have been lost by accident, as many as 240 worn out, and the rest are running.

"The largest boat in the United States is the 'Natchez,' of 860 tons, and about 300 horse-power, designed to run between New York and the Mississippi. The 'Illinois' and the 'Mattison,' on Lake Erie, are next in size, the first being 755 and the last 700 tons. The 'Massachusetts,' on Long Island Sound, is the next, being 626 tons, and the 'Buffalo,' on Lake Erie,' next largest, being 613 tons.

"The largest boats passing Louisville in 1837 were the 'Uncle

Sam,' of 490 tons, and the 'Mogul,' of 414 tons; below Louisville the 'Mediterranean,' of 490 tons, and 'North America,' of 445 tons, on the Ohio, and the 'St. Louis,' of 550 tons, on the Mississippi, were running.

"The whole number of steamboats ascertained and estimated to be in this country (1838) is 800. In England, in 1836, the whole number of steamboats in that country was computed to have been 600. On the Western and Southwestern waters near 400 were supposed to be running in 1838, where none were used till 1811, and where, in 1834, the number was computed to be but 234. On the Ohio River, in 1837, 413 steamboats are reported to have passed through the Louisville and Portland Canal, not including many below and above, which never passed through. It is deserving of notice that of the 413 near 60 went out of use by accidents, decay, etc., within the year; and 104 of the others were new, and many of them were probably destined to run on other rivers. As an illustration of the rapid increase of steamboat business on the Ohio, the steamboat passages through the Louisville Canal increased from 406, in 1831, to 1501, in 1837, or about fourfold in six years. Seventy boats were running in 1870 on the Northwestern lakes, where a few years since the number was very small, having been as late as 1835 only 25. Of the 800 steamboats now in the United States the greatest number ascertained to be in any State is 140, in the State of New York.

"The tonnage of all the steamboats in the United States is computed to exceed 155,473. Of this, 137,473 is in boats reported. By the official returns, the whole tonnage now would probably equal near 160,000 tons, having been in 1837 153,660. Many boats included in those returns have since been lost or worn out, and several new ones have been built.

"The tonnage of each boat averages about 200, and the estimates, where the returns have been defective, were on that basis. In England the tonnage is estimated to have been 67,969 in 1836.

"The greatest loss of life on any one occasion in a steamboat was by a collision, and the consequent sinking of the 'Monmouth,' in 1837, on the Mississippi, when 300 lives were lost. The next greatest were by the explosions of the 'Oronoka,' in 1838, on the Mississippi, by which 130 (or more) lives were lost; and of the 'Moselle,' at Cincinnati, Ohio, by which between 100 and 120 persons were destroyed. The greatest injury to life by accidents to boats from snags and sawyers appears to have been 13 lost, in 1834, on the 'St. Louis,' on the Mississippi River. The greatest by shipwreck was in the 'Home,' in 1837, on the coast of North Carolina, when 100 persons perished. The greatest by fire happened in the 'Ben Sherrod,' on the Mississippi River, in 1837, when near 130 perished. The number of steamboats built in the United States in 1834 was 88; in 1837 it was

184, having increased over 200 per cent in three years. The greatest number of steamboats and other steam-machines appear to have been constructed at Pittsburg, Cincinnati, and Louisville, on the Western waters, and New York, Philadelphia, and Baltimore, on the Atlantic. At Louisville alone, from 1819 to 1838, there were built 244 steam-engines, 62 of which were for boats. The fuel originally used in steamboats in the United States was wood; of late years bituminous coal has been substituted in many instances, also anthracite coal. The latter, from the small space it occupies, seems to possess a decided advantage for sea-going vessels, as well as locomotives.

"Some steamboats made of iron are believed to be in use in Georgia, if not in other parts of this country, though none of that material have been manufactured here; it is computed that their cost is less than those of wood, and as they draw less water with the same freight, they are most useful on shallow streams.

"The number of steamboats built in the United States during the years ending on the 30th of September, 1838 and 1839, were 90 and 125 respectively."[3]

1837.—WHAT DR. LARDNER SAID ABOUT TRANSATLANTIC NAVIGATION.—It has been frequently said, and it is generally believed, that Dr. Dionysius Lardner publicly asserted before the voyages of the "Great Western" and "Sirius" were accomplished facts, that a steam voyage across the Atlantic was a *physical impossibility.* What he did say was, however, quite different,—viz., that such vessels could not be made a paying investment for such a voyage without government assistance or a subsidy, in the then state of steam navigation.

He says,[4] "It cannot be seriously imagined that any one who had been conversant with the past history of steam navigation could entertain the least doubt of the abstract practicability of a steam-vessel making the voyage between Bristol and New York.

"A vessel having as a cargo a couple of hundred tons of coals would, *cæteris paribus,* be as capable of crossing the Atlantic as a vessel transporting the same weight of any other cargo. A steamer of the usual form and construction would, it is true, labor under comparative disadvantages, owing to obstructions presented by her paddle-wheels and paddle-boxes; but still it would have been preposterous to suppose that these improvements could have rendered her passage to New York impracticable. But, independently of these considerations, it was a well-known fact that long antecedent to the epoch adverted to, the Atlantic had actually been crossed by the steamers 'Savannah' and 'Curaçoa.' . . . Projects had been started, in 1836, by two different and opposing interests, one advocating the establishment of a line of

[3] Extract from the Report of the Secretary of the Treasury to Congress, June 30, 1880.

[4] Museum of Science and Arts, vol. x., 1856.

steamers to ply between the west coast of Ireland and Boston, touching at Halifax, and the other a direct line making an uninterrupted trip between Bristol and New York. In the year 1836, in Dublin, I advocated the former of these projects, and in 1837, at Bristol, at the next meeting of the British Association, I again urged its advantages, and by comparison discouraged the project of a direct line between Bristol and New York. When I say that I advocated one of these projects, it is needless to add that the popular rumor that I had pronounced the Atlantic voyage by steam impracticable is utterly destitute of foundation."

The meeting took place August 25, 1837, and the report of the *Times'* special reporter which appeared in that paper on the 27th says, "Dr. Lardner said he would beg any one, and more especially of those who had a direct interest in the inquiry, to dismiss from their minds all previously-formed judgments about it, *and more especially upon this question* to be *guarded against the conclusions of mere theory;* for if ever there was one point in practice of a commercial nature which more than another required to be founded on experience, it was this one of extending steam navigation to voyages of extraordinary length. He was aware that, since the question had arisen, it had been stated that his own opinion was averse to it. *This statement was totally wrong;* but he did feel that great caution should be used in the means of carrying the project into effect. Almost all depended on the first attempt, for a failure would *much retard the ultimate consummation of the project.*

"Mr. Scott Russell said that he had listened with great delight to the lucid and logical observations they had just heard. He would add one word. Let them try this experiment with a view only to the enterprise itself, but on no account try any new boiler or other experiment, but have a combination of the most approved plans that had yet been adopted.

"After some observations from Messrs. Brunel and Field, Dr. Lardner, in reply, said *that he considered the voyage practicable,* but he wished to point out that which would *remove the possibility of a doubt,* because if the first attempt failed it would cast a damp upon the enterprise and prevent a repetition of the attempt." [5]

"What I did affirm in 1836–37," continues Dr. Lardner, "was that the long sea-voyages by steam which were contemplated could not at that time be maintained with that regularity and certainty which are indispensable to commercial success by any revenue which could be expected from the traffic alone, and that without a government subsidy of a considerable amount such lines of steamers, although they might be started, could not be permanently maintained."

He then proceeds to show, up to 1851, the commercially non-success of transatlantic steamers that were not subsidized, and adds,—

[5] London *Times*, August 27, 1837.

"Thus it appears, in fine, that after a lapse of nearly fourteen years, notwithstanding the great improvements in steam navigation, the project advanced at Bristol, and there pronounced by me to be commercially impracticable, signally failed."[6]

It is a pity that he could not have looked a little farther into the future and seen the commercial success of later steamships, consequent upon their increase of size and the economical improvements adopted, as also from the demand for the agricultural products of the United States furnishing return cargoes.

1839.—SIR JOHN ROSS'S IDEAS ABOUT STEAM WAR-VESSELS.—Sir John Ross, royal navy, the distinguished Arctic voyager, in his "Treatise on Navigation by Steam,"[7] says, "The ships and vessels proper in steam navigation will admit of a still greater variety than sailing-vessels; and although none have as yet been constructed of a greater tonnage than one thousand tons, there is no good reason why they may not be twice as large, or of as much tonnage as the largest ship in the navy; for although there may be a limit to the size of the boiler, shafts, and other parts of the machinery, there can be no objection to two sets, if the ship is too large for one." He then proceeds to say, "There can be no doubt that in a future war a fleet of men-of-war, and indeed a small squadron, will scarcely be effective without a considerable, if not an equal number of steam-vessels to act under various circumstances; and, among other things, their province will be to tow or increase the velocity of the ships in calms or light winds, and particularly in action." Such vessels, he adds, should have the parts containing the machinery fortified against shot at distances where it would take effect upon her consort; and he also proposes a class of steam gunboats for coast defense, having their guns and paddles covered by a *semicircular shield-deck of iron;* he gives sectional illustrations of this proposed defense.

He says also in the same volume, "It is believed by those who have not devoted much time and attention to the subject of steam navigation that *it cannot be extended to perform foreign voyages*, and it must be confessed that the experiments which have been made seem rather to confirm than to alter that opinion; but it will be shown here that the trials which have hitherto been made have not been of such a nature as to justify a decided opinion." He also gives in the volume, illustrated by diagrams, a system of naval tactics, in which the steam-vessels are represented either as towing ships of the line on the off-side, or as whippers-in of a convoy in time of war.

[6] Museum of Science and Arts, vol. x., 1856.

[7] Treatise on Navigation by Steam, etc., and an Essay towards a System of the Naval Tactics peculiar to Steam Navigation, as applicable both to Commerce and Maritime Warfare. By Sir John Ross, C. B. Second edition. 1 vol., quarto. London: John Weale, 1837.

In 1837 Mr. Samuel Hall, of Basford, the inventor of the tubular condenser, patented a wheel having its floats placed obliquely, but so arranged that every three of them were set in an opposite direction; and about the middle of 1838 a patent for another oblique paddle-wheel was taken out by Lieutenant W. S. Hall, of the Eighteenth Regiment. These and other inventions for the improvement of the paddle-wheel preceded the invention of the Archimedean propeller, improperly called the Archimedean screw, being only a small segment of a screw, and resembling more a short fan than a screw. The system was taken from a kind of small windmills called "water-snakes" employed in low countries like Holland to draw water off the plains.

1837.—THE GERM OF THE UNITED STATES STEAM NAVY.

After the destruction of the steam-battery "Demologos," or "Fulton 1st," the steam galliot "Sea-Gull," a purchased vessel of one hundred tons, was employed in Porter's mosquito fleet for the suppression of piracy in the West Indies in 1822–25. She was employed as a receiving-vessel at Philadelphia for many years, and finally sold out of the service in 1840. But "Fulton 2d," launched in 1837, from the New York Navy-Yard, was the pioneer steam war-vessel of our present naval organization, and the second war-vessel built by the United States.

She was designed and intended for a floating battery for the defense of New York harbor, as a substitute for the "Demologos." With machinery of great power, she attained for that time a high rate of speed, but was virtually inadequate for an ocean steamer, although she did make one trip to the West Indies and back.

Her hull was built solid of the best live-oak. Strength rather than speed was consulted in its lines, her midship cross-sections being the same for one-third of her length, with a bluff bow, partially relieved by a hollow line and finer lines aft. Heavy bulwarks were built up from her decks for the protection of her crew and battery, beveled in all directions to glance off an enemy's shot. She had three masts and was rigged as a topsail schooner. Her principal dimensions were: Length between the perpendiculars, one hundred and eighty feet; extreme beam on deck, thirty-four feet eight inches; depth of hold, thirteen feet four inches; estimated tonnage, nine hundred and seventy-three tons. At thirteen feet draught she displaced fourteen hundred and thirty-three tons of sea water. She had two horizontal condensing engines on the spar-deck, supported by wooden frames. The boilers were of copper, set in flues wagon-shaped and four in number, each with its separate smokestack. The paddle-wheels were twenty-two feet ten inches in diameter; the buckets eleven feet six inches wide and three feet broad. Her armament consisted of eight long 42-pounders and one 24-pounder. Her total cost, hull and

equipments, engines, wheels, and boilers, was two hundred and ninety-nine thousand, six hundred and fifty dollars.

There are no logs extant of the performances of this vessel, but in a letter to Captain Matt. C. Perry, dated February 18, 1838, from Chas. H. Haswell, the chief engineer, the speed in smooth water in New York Bay is given at fifteen statute miles per hour with a boiler-pressure of thirty pounds per square inch, cutting off at three eighty the stroke with the old-fashioned canboid cut-off, the engines making twenty-six double strokes of piston per minute. The average draught of water was ten feet six inches. The coal-lockers contained coal for two days' consumption.

"Fulton 2d" remained for several years a useless hulk at the New York Navy-Yard, until 1853, when she was hauled upon ways, lengthened and repaired, and fitted with new machinery, and became known as "Fulton 3d."[8]

The "Fulton 2d" lay at the New York Navy-Yard for many years a useless hulk, until 1852, when the old engine was condemned and she was fitted with new engines of different arrangement, two iron boilers being substituted for the copper. The new engine was a single, inclined, condensing one, with circular, double-drop return flue boilers.

The hulk was hauled upon the ways and thoroughly repaired. The upper deck and heavy bulwarks removed and a complete change made in her internal arrangements, but none in her lines. She was rigged as a two-masted fore-topsail schooner. Her armament consisted of one pivot 8-inch Paixhan gun forward, and four medium 32's in broadside.

The hull of this "Fulton 2d" was launched August 30, 1851, and on the 1st of January, 1852, a trial trip was made in the harbor of New York, embracing a run of seventy-one miles, under steam; average miles per hour 13.34; consumption of coal per hour, 2280 pounds; average revolutions per minute, 21; horse-power developed, 899; draught, 10 feet. After cruising in New York harbor for the relief of distressed vessels, she sailed on the 25th of February to join the Home Squadron in the Gulf of Mexico. On the 31st of March she steamed from Havana to Pensacola, five hundred and fifty miles, on an air-line in fifty-five hours, said to be at that time the quickest trip ever made between those two ports. Going down the bay from Pensacola to the navy-yard, she ran the six miles in twenty-two minutes, accurate time, a rate equivalent to 17.73 miles per hour.[9]

"Fulton 3d" was in ordinary at the Pensacola Navy-Yard when

[8] For full particulars of "Fulton 1st," 2d, and 3d, see the Naval and Mail Steamers of the United States, by Engineer-in-Chief Chas. B. Stuart, U.S.N., 1853.

[9] Stuart's Naval and Mail Steamers of the United States.

it was taken possession of by the rebels in 1862, and was then destroyed.

October 31, 1837.—The Secretary of the Navy authorized Captain M. C. Perry "to appoint two first-class and two second-class assistant engineers; the appointments to be confirmed by the commandant of the station." "The engineers must receive from you," he adds, "a letter of appointment revocable at any time by the commanding officer of the station, upon complaint of intemperance, incapacity, insubordination, negligence, or other misconduct, preferred by the commander of the steamer, if proved to the satisfaction of the commanding officer of the station. The commander of the steamer, of course, to have the power of suspending them from duty if necessary. The engineers must be required to sign some proper instrument of writing which will legally make them liable to this law for the government of the navy, but to be exempt from corporal punishment, which instrument is to be transmitted to the Secretary of the Navy, with their letters accepting their appointments."

November 7, 1837.—The Secretary wrote Captain Perry that the "Fulton," as recommended by the Commissioners of the Navy and approved by the Navy Department, was allowed,—two first-class engineers, at eight hundred dollars per annum each; two second-class engineers, at five hundred dollars per annum each; four coal-heavers, at fifteen dollars per month; and eight firemen, at twenty-five dollars to thirty dollars per month.

Both the firemen and coal-heavers were to sign the ship's articles, and were to be removable "at the pleasure of the commander of the vessel," as authorized for the reduction of petty officers and seamen. "If additional coal-heavers should be found necessary, some of the seamen or ordinary seamen of the vessel might be designated by the commander to perform that duty." He next wrote,—

"NAVY DEPARTMENT, November 21, 1837.

"CAPT. M. C. PERRY, Com'dg Str. 'Fulton,' New York:

"SIR,—Your letter of the 16th instant, relative to the engineers of the 'Fulton' and their uniforms, has been received.

"*The adoption of a uniform* such as you may approve, *if agreeable to those at whose expense it is to be provided*, meets with the sanction of the Department, and it is also desirable, as mentioned in your letter, that none be appointed engineers but those of the very best standing.

"I am, respectfully, &c.,

"M. DICKENSON,
"*Secretary of the Navy.*"

A letter dated December 19, 1837, authorized Captain Perry to employ, agreeably to his request, four additional firemen.

December 21, 1837, the Secretary wrote him, "Your communication of the 17th instant has been received, with its several inclosures, and the appointments of assistant engineers which you have made, as well as the measures you have taken in regard to the engagements, etc., of the engineers, firemen, and others, of the steamer 'Fulton,' are approved by the Department."

February 13, 1838, the Secretary wrote Captain Perry that he approved of his suggestion, and says, "I have directed Commodore Ridgely to place on board the 'Fulton' five *apprentices* to the navy, who are to be under the particular charge of the engineers (one to each) and exclusively attached to the engineers, and to be shipped and paid as other apprentices."

February 21, 1839, the Secretary authorized the pay of the second assistant engineers on the "Fulton" to be increased from five hundred to six hundred dollars from the 1st of March.

March 1, 1839, he authorized "the salary of such engineers as now receive eight hundred dollars to be increased to nine hundred."

In this connection it is interesting to note the rapid rise in importance of our steam navy in the past forty-one or forty-two years. Its *personnel* in 1882 consists of

10 chief engineers on the active list ranking relatively with captains in the navy, one of whom, as chief engineer of the bureau of steam engineering, has the relative rank of commodore; 15 chief engineers with the relative rank of commander; 45 chief engineers with the relative rank of lieutenant-commander; 81 passed assistant engineers with the relative rank of lieutenant; 17 passed assistant engineers with the relative rank of master; 11 assistant engineers ranking as masters; 51 assistant engineers with the relative rank of ensign; 62 cadet engineers, graduates; 74 cadet engineers at the Naval Academy,—viz., 25 first-class; 25 second-class; 24 third-class.

1 chief engineer on the retired list, with the relative rank of captain; 1 chief engineer with the relative rank of commander; 6 chief engineers with the relative rank of lieutenant-commander; 18 passed assistant engineers with the relative rank of lieutenant; 25 assistant engineers with the relative rank of master.

While the rank of engineer officers has been increased the pay has similarly advanced. The engineer-in-chief now receives $5000; chief engineers, from $4000 to $2800, on duty; passed assistant engineers, from $2200 to $2000, on duty; assistant engineers, from $1900 to $1700, on duty; cadet engineers, from $1000 to $500, on duty; and their right to leave pay has been recognized. When retired they receive three-fourths of their highest pay on the active list.

CHAPTER IV.—1838–1858.

The Inauguration of Regular Transatlantic Steam Navigation.—Arrival of the City of Kingston at New York from Cork, April 2, 1838.—Arrival of the Sirius from Cork and the Great Western from Bristol at New York, April 23, 1838.—The President, 1839.—The British Queen, 1839.—Dimensions of the Earliest and Largest Transatlantic Steamships, 1840.—Miscellaneous Notes.—The Cyclops, Steam Frigate, 1840.—The Nemesis, 1840.—The Screw Steamer Archimedes, 1840.—The Argyle, Chili, and Peru, 1839.—The Cunard Line Inaugurated, 1840.—The Bangor, 1842.—The French Steam Navy, 1840.—Screw Steamers in Great Britain, 1842.—Steam Navigation on the Indus, Established 1842.—The Driver, the First Steamship to Circumnavigate the Globe, 1842.—United States Steamship Princeton, the First Screw Steam War-Vessel, 1843.—H. M. Ship Rattler, the Second Screw Steam War-Vessel, 1843.—The Great Britain, 1843.—First English Steam Collier, 1844.—The Midias and Edith, the First Steam Screw Vessels to China, 1844–45.—The Witch, 1845.—American Mail Steamships to Havre and Bremen, 1845–50.—The Propeller Massachusetts, 1845.—Thames Steamboats, 1845.—The North River Steamer Oregon, 1846.—The First French Atlantic Steamer, 1847.—First American Steamer to the Pacific, 1848.—The Gemini Iron Twin Steamer, 1850.—Screw Steamship Himalaya, 1851.—The Francis Skiddy, 1852.—The Australian, 1852.—The Argo, the Second Steamship and First Screw to Circumnavigate the Globe, 1854.—The Golden Age, 1854.—The Cunard Steamer Persia, 1855.—Steam Vessels of the Royal Navy, 1856.

1838.—Daniel Webster, in a lecture at Boston, said, in allusion to steam-power, "In comparison with the past, what centuries of improvement has this single agent comprised in the short space of fifty years! . . . What further improvements may still be made in the use of this astonishing power, it is impossible to know, and it were vain to conjecture. What we do know is, that it has most essentially altered the face of affairs, and that no visible limit yet appears beyond which its progress is seen to be impossible." When Webster spoke thus, the grand problem of ocean steam navigation had not been solved; in fact, the possibility of a steamship crossing any ocean was generally denied both by practical and scientific men.

At a meeting of the directors of the Great Western Railway, October, 1835, one of the party spoke of the enormous length, as it then appeared, of the proposed railway from London to Bristol. Mr. Brunel exclaimed, "Why not make it longer, and have a steamboat to go from Bristol to New York, and call it the Great Western?" The suggestion, treated at first as a joke, soon engaged the serious attention of three of the leading members of the board. A tour of the great ship-building ports of the kingdom was made in order to collect information. In the report of the result of the inquiry Mr. Brunel inserted a paragraph which laid down the principles on which the success of oceanic steam navigation wholly depended. It was this, that

the resistance to the passage of vessels through the water increases at a lower rate of progression than their tonnage. At equal speeds a vessel twice the size of another will encounter four times the resistance. But its capacity, or tonnage, will be eightfold that of the smaller vessel. By a well-proportioned increase of size, therefore, it is possible to employ far more powerful engines, to carry enough coal for the consumption of a long voyage, and at the same time to have ample accommodation for passengers and goods. So true is this, that it is now admitted that the economical limit to the size of vessels is imposed rather by the dimensions of ports and harbors than by the exigencies of the shipwright. Speed, also, can be considerably increased by the employment of more powerful engines; the limit to ocean speed being imposed by another physical law, that the resistance increases as the cube of the velocity.

The keel of the "Great Western" was laid, and assurance given that she would be followed by a splendid line of vessels, which would consign the packet-ships to the care of the historian as "things that were."

The project was simultaneously started by two opposing interests, one advocating a line of steamers to ply between the west coast of Ireland and Boston, touching at Halifax, the other a direct line between Bristol and New York. The former, the "British and American Steam Navigation Company," resolving not to be left astern by the company in Bristol, which was getting the "Great Western" ready for sea, chartered the "Sirius," a steamer which had been built to run between London and Cork, to run against the "Great Western," and she made two voyages in their employ.

1838.—April 2, 1838, the British steamer "City of Kingston" arrived at New York from Cork, Ireland, being the second British steamship that crossed the Atlantic. Subsequently she went to the West Indies and returned to Norfolk and Baltimore.

1838.—THE "SIRIUS."—The "Sirius" arrived at New York on St. George's day, the 23d of April, also the anniversary of the birth and death of Shakespeare. The New York papers of that date say, "Myriads of persons crowded the Battery to have a glimpse of the first steam-vessel which had crossed the Atlantic from the British Isles and arrived safely in port." The "Sirius," of seven hundred tons' register and engines of three hundred and twenty horse-power, sailed from Cork at 10 A.M. Wednesday, April 4, 1838, and was followed by the "Great Western," which sailed from Bristol (the port which sent out the Cabots), April 8, both vessels arriving at New York April 23, 1838, the "Sirius" a few hours in advance of the "Great Western."

The "Sirius" was advertised to return May 1, and the Chevalier Wickoff was one of seven passengers who met on the tug-boat which

was to convey them on board. He says in his reminiscences, "We moved off amid the hurrahs of excited people who came on every kind of craft to wish us God speed." Among the passengers was James Gordon Bennett, the remarkable founder of the New York *Herald*. He says, "Perceiving a tall, slim man near me, I entered into conversation. His physiognomy was striking: lofty forehead, prominent nose, firm mouth, and the general expression, though somewhat stern, not forbidding. After chatting for some time I remarked,—

"'I hear the famous Bennett is on board.'

"'Yes, I believe he is,' said the tall man, with a smile.

"'Do you feel at all nervous about it?'

"'Not in the least,' was the reply.

"'Well, for my part,' I continued, 'I am not altogether comfortable on the point.'

"'Why?' asked my companion.

"'Because he is so given to saying sarcastic things of people.'

"'That depends a good deal,' he answered, 'whether they are worth it.'

"'Do you know him by sight?' I inquired.

"'Very well.'

"'Then do point him out if you see him on deck.'

"'He is standing before you. My name is Bennett.'

"'What!' I exclaimed, on recovering my breath; 'are you the man so fiercely assailed, and whose humorous sallies I have read with such delight these six months past?'

"'*Ecce homo!*' he retorted.

"All went merrily the first week. Then stormy weather set in, and our little steamer was put to a tougher test than I had expected. She was dreadfully knocked about, but was stanch and steadfast in the worst gales.

"When only a couple of days from the English coast, the coal was nearly exhausted, and they economized by going at half-speed, but towards the last we were forced to burn up whatever could be spared. On entering the English Channel the vessel became enveloped in a dense fog. Suddenly the mist cleared off and it was found we were heading on to one of the Sicily Islands, and in half an hour would have been a wreck. On the seventeenth day we put into Falmouth for coal and provisions, and thence started for London."

The "Sirius" ran afterwards on the line of steam-packets between Dublin and Cork, and ran on the rocks of Bally Cotton Bay January 16, 1847, and was wrecked, when twenty lives were lost.

The "Great Western" made her return trip to Bristol in less than twelve days. Steam traveling across the Atlantic was thus inaugurated.

The following account of these pioneer steamships, and of their

first voyage across the Atlantic, is from the New York *Express* of April 24, 1838.[10]

"ARRIVAL OF A STEAMER FROM EUROPE.

"*Seven days later from London. Six days later from Liverpool.*

"Last night our news schooner 'Eclipse' boarded the steamer 'Sirius,' Lieutenant Richard Roberts, R. N., commander, from Cork, whence she sailed on the 4th inst. She has performed the voyage without accident, save a slight one which befell her on coming in the Hook, where she grounded. Since her departure she has used only fresh water in her boilers, having on board Mr. Hall's condensing apparatus."

Under the head of marine news is reported: "Steam-packet 'Sirius,' Roberts, from Cork, sailed April 4, with forty-six passengers, etc., to Wadsworth & Smith. The 'Sirius' went ashore on the point of the Hook last evening about ten o'clock. She did not sustain any damage, and will be got off on the rising tide."

The same paper contains the following advertisement:

"BRITISH STEAM-PACKET SHIP FOR LONDON, TO SAIL FROM NEW YORK, MAY 1, 1838.

"The new and powerful Steamship

"'SIRIUS,'

"700 tons burthen and 320 Horse-power,

"LIEUTENANT R. ROBERTS, *Commander*,

is intended to sail from London, March 28th, touching at Cork, and thence, on the 2d of April, for this port, returning from New York to London on the 1st of May.

"This vessel has superior accommodation, and is fitted with separate cabins, for the accommodation of families, to whom every possible attention will be given.

"Cabin, $140, including provisions, wines, etc.

"Second cabin, $80, including provisions.

"This superior steamship has been chartered by the directors of the British and American Steam Navigation Company of London, to meet the pressing demands of the public, in anticipation of the steamship 'British Queen,' now building; is a new vessel, about six months old, and has proved herself superior to any steam-vessel in British waters in speed and seaworthy qualities.

"Further information afforded on application; and for freight and passage apply to

"WADSWORTH & SMITH,
"4 Jones Lane (rear 103 Front Street),
"*Agent of the American and British Steam Navigation Company.*"

The following is the first advertisement of the "Great Western" in the New York *Courier and Enquirer*, April 24, 1838:

"BRITISH STEAM-PACKET SHIP

"'GREAT WESTERN,'

"JAMES HOSKINS, R. N., Commander,

"Having arrived yesterday from Bristol, which place she left on the 8th inst., at noon, will sail from New York for Bristol on Monday, 7th May, at 2 o'clock P.M.

"She takes no steerage passengers. Rates in the Cabin, including Wines and

[10] The New York *Courier and Enquirer*, of April 23, 1838, has this notice of the arrival of the "Sirius:"

"STEAMSHIPS 'SIRIUS' AND 'GREAT WESTERN.'—SPLENDID SIGHT FROM THE BATTERY.

"Yesterday was a day of unusual excitement in this city, it being universally considered the beginning of a new era in the history of Atlantic navigation. The steamship 'Sirius' having arrived Sunday night, thousands assembled to see her, as the news spread about the city. She anchored a short distance from the castle, and crowds upon the Battery had a view of her from that promenade. The sun shone clear, and the weather was as fine as could be wished.

"The 'Sirius' sailed from Cork on the evening of the 4th instant, and made the Highlands of New York at six o'clock P.M. on the 22d, making the passage in eighteen days, and having on board forty-seven passengers. During the day she was thronged by small boats filled with passengers to view her. About one o'clock it was announced by telegraph that the steamer 'Great Western' was off the Hook, when thousands poured down Broadway; and the Battery at two P.M. presented a brilliant appearance. The crowd reminded one of the landing of the 'Nation's guest,' Lafayette. The smoke of the 'Great Western' was seen in the horizon ascending in black volumes long before her hull was visible. The ship, as she came in sight and passed Bedloe's Island, received a salute from the fort of twenty-six guns. She approached the Battery through a fleet of row-boats and small craft, cheered by every one. She soon ranged alongside the Castle, sailed around the 'Sirius,' which saluted her, and the crowd from the wharves, Castle, boats, etc., gave three hearty cheers, returned by those on board. She then went up the East River, and anchored near Pike Street. This successful experiment of steam-packets between New York and England gave life and joy to all.

"The 'Great Western' left Kingroad, Bristol, at two o'clock, April 7th, and she was, at two o'clock, April 23d, only sixteen days, in New York, thus bringing England nearer to us than many parts of our own country. This has been done in a season of the year, not of summer sunshine, but of gales, storms, sleet, and hail,—and *steam*

Provisions of every kind, 30 guineas; a whole state-room for one person, 50 guineas. Stewart's fee for each passenger, £1.10s. sterling. Children under 13 years of age half price. No charge for letters or papers. The captain and owners will not be liable for any package unless a bill of lading has been given for it. One to two hundred tons can be taken at the lowest current rates.

"Passage or freight may be engaged, a plan of the cabin may be seen, and further particulars learned, by applying to

"RICHARD IRVING, 98 Front Street."

The "Great Western" continued to sail from the Severn, and subsequently from the Mersey, and made seventy-four transatlantic passages before passing into the hands of the West India Company. On her second trip from New York she reached Bristol in twelve and a half days.

navigation across the Atlantic is no longer an experiment, but a plain matter of fact. The thing has been done triumphantly.

"The 'Great Western' was built at Bristol, by the Great Western Steamship Company, and intended to commence a regular line between Bristol and New York. She was launched on the 19th of July, 1837. Her length between the perpendiculars, from the forepart of the stem to the afterpart of the stern at the keel, 212 feet; length of keel on the blocks, 205 feet; length of cabin-deck (saloon), 75 feet; length over all (from figure-head to taffrail), 235 feet; breadth between paddle-wheels, 34 feet 4 inches; depth under deck to top of floors, 23 feet 3 inches; scantling floors on the side of keel, 15 inches, sided; ditto, 16 inches, moulded; length of floors, 24 feet; thickness of bends, 7 inches; bottom plank, 5 inches; top sides, 4 inches; sheer streaks, 5 inches; upper-deck clamps, 8 inches; diagonal riders, 5 inches, 3 feet apart; iron diagonals, 4 inches by $\frac{4}{4}$; bilge planks, 6 inches; keelson, 20 by 21 inches.

"Tonnage, 1320 tons; best berths, 150; berths for crew, 26; berths for engineers, firemen, and officers, 40; two engines, by Maudsley & Field, 400 horse-power, 200 each; diameter of cylinder, 73$\frac{1}{2}$ inches; length of stroke, 7 feet; coal stowage, 600 tons, or enough for thirty tons per diem for twenty days.

"Her whole cost amounted to about £50,000, £21,373 15s. 10d. of which has been expended for ship-building, £13,500 for the engines, about £1000 for the fitting up, furniture, and painting of the grand saloon, and the remainder for rigging, equipment, stores, and coals.

"The 'Sirius' is a beautiful model, seven hundred tons, three hundred and twenty horse-power, schooner-rigged. Notwithstanding rough weather, she came over with perfect safety. Passengers were delighted with her performance. Her boilers were supplied with fresh water by a distilling apparatus which converted the salt into fresh water. The distilling worms (small copper tubes) measured, as reported, near *four miles!*

"The following is the journal of her voyage:

"4th April.—Started; light breezes from N.E. Draft of water, 15 feet 2 inches.

"5th.—Heavy at N.E. to N.N.E., windy; fresh gale, much head-sea, slight rain. Exchanged numbers with the bark 'Dale,' of Liverpool. Weighted one ton of coal, which lasted 1 h. 30 m.; pressure on the boilers, 53.4 pounds.

"6th.—Stormy, W.N.W. breezes, with squalls and heavy head-sea. Passed two brigs, one standing east and the other north.

"7th.—Same, strong gales and squally, with rain,—vessel laboring heavy. Passed two large ships standing to the eastward, under

double-reefed topsails. Very squally. Passed a barque. Heavy sea, with long swell; took in water on deck.

"8th.—Same, with hazy weather. Stopped engine, owing to one of the braces working loose—started the engine in an hour after—heavy rains.

"9th.—Wind still W.N.W., and a heavy head-sea—clear. Passed a brig standing east. Set a single-reefed foresail and double-reefed mainsail.

"10th.—Spoke ship 'Star,' of New York, longitude 24 W.—fresh gales and squally—shipped a great deal of water.

"11th.—Winds E.N.E.—passed a ship standing to the south—light breezes.

"12th.—Light winds, easterly—stopped engine to pack the stuffing-boxes—light winds and fair.

13th.—S.E., light breezes. Spoke the 'Roger Sherman,' of Bath, 36 days from New Orleans, bound to Havre—hoisted colors to a Falmouth packet—three sails in sight—reduced the weight to 33.4 lbs. on boilers.

"14th.—S.W. light breezes—passed a ship standing to the westward—observed a change in the color of the water.

"15th.—Heavy W.N.W. gale; dark and foggy.

"16th—N.W. to W. gales; heavy head-sea and snow—vessel laboring—stopped engine three-quarters of an hour to fasten screws.

"17th.—N.W. by W. winds; squally, with hail and snow.

"18th.—S.W. winds and squalls.

"19th.—Same.

"20th.—W. by N., heavy sea and hard rain—stopped engine, and was boarded by Her Majesty's ship "Coromandel," from Bermuda, bound to Halifax, with Eleventh Regiment.

"21st.—Ditto—exchanged signals with an Austrian brig.

"22d.—Made light for the pilot off the Highlands. Not getting a pilot, the 'Sirius' ran in, and then touched off the Hook—receiving, however, no damage."

Her Majesty's consul historically records the event of her arrival in the following letter addressed to the commander of the "Sirius:"

"HER MAJESTY'S CONSULATE,
"NEW YORK, April 23, 1838.

"SIR,—I have the honor and happiness to congratulate you on the arrival of your steamship across the Atlantic, at a season when strong gales so generally prevail, thereby having proved that British skill has accomplished a most important enterprise, which will produce a revolution in commercial and social intercourse, of which we are incapable of forming any just conceptions. Permit me, sir, to add that I have, in common with my fellow-subjects of Her Majesty in this city, a further cause of rejoicing, that the honor of accomplishing the enterprise has been

achieved by a son of the British navy, and that it was completed on St. George's day.

"I have the honor to be, sir,
"Your humble servant,
"JAMES BUCHANAN.

"RICHARD ROBERTS, Esq., R. N.,
"Commander of the Steamship 'Sirius.'"

"LOG OF THE 'GREAT WESTERN.'—We published yesterday an abstract from the log-book of the 'Sirius,' showing her daily progress, and the sort of weather she had to encounter, and we now give an extract from the log-book of the 'Great Western':

Dates.	Course.	Distance.	Latitude.		Longitude.		Wind.	Remarks on Weather.
			Acct.	Obs.	Acct.	Chron.		
April 8...	10 P.M.		Sandy I.				N.W. N.N.W	Strong gale.
" 9...	West.	240		50.27		07.32	N.N.W. and S.W.	Moderate.
" 10...	78-30 W.	213	49.55	00.00	12.50	12.16.45	W. by N. and S. W.	Moderate.
" 11...	W. by S.	206	49.04	43.11	17.25	17.10	S.W. and E. by S.	Moderate and hazy, rough at night.
" 12...	W. 1-2 S.	231	47.47	47.17	22.48	22.05.10	E. by S.E. to S.E.	Moderate and cloudy.
" 13...	W. 1-4 S.	218	46.56	46.56	28.09	28.27	E.S.E.	Light winds.
" 14...	W. 3-4 S.	218	46.26	46.28	33.40	34.09	S.W. and S.S.W.	At 10 P.M. squally, with small rain.
" 15...	W. by S.	241	45.24	45.19	39.43	39.38.30	S.E. to S.W. by S.	Strong and squally, vessel lurched deeply but easy.
" 16...	W. 3-4 S.	243	44.46	44.34	45.19	45.31	Variable.	Squally.
" 17...	W. 3-4 S.	185	44.07	44.10	49.46	49.21	S.W. to W.N.W.	Strong gales and heavy sea.
" 18...	W.S.W.	169	42.02	42.58	52.55	52.30	W.N.W. to W. by N.	Moderate.
" 19...	W. 1-4 S.	206	42.02	42.02	56.50	56.49.45	S.W.	Strong winds and heavy sea.
" 20...	W. 3-4 S.	183	41.36	No ob	60.54	No ob	S.W. W.N.W.	Strong winds and heavy sea, ship very easy.
" 21...	W. 3-4 S.	192	41.05	40.30	65.05	64.24.13	N.N.W.	Light winds and cloudy.
" 22...	S. 83 W.	198	39.48	39.41	68.38	69.03.30	N.N.W. to W.N.W.	Strong winds and frosty.
" 23...	S. 79 W.	230					N.N.W. and N.	Fine weather; at 10 received a pilot.

To harbor, 50; 3223 miles steaming.

A passenger on the "Great Western," on this her first transatlantic voyage, in a communication to Chambers's *Edinburgh Journal*, says,—

"A number of daring passengers—for daring they were thought in that day—took berths for the voyage in the 'Great Western;' and on 8th April, 1838, at noon, the gallant ship steamed away from her anchorage at the mouth of the river Avon, and majestically descended the Severn, bound for New York. One of her passengers says, when they were fairly under way, 'Whatever misgivings might previously have assailed us in the contemplation of our voyage, I believe that at this moment there was not a faltering heart among us. Such stability, such power, such provision against every probable or barely possible contingency, and such order presented itself everywhere on board, as was sufficient to allay all fear.'

"Suffice it that the 'Great Western' entered the harbor of New York at full speed on the afternoon of 23d April, having performed the passage in the then unprecedentedly short period of fifteen days, in which only four hundred and fifty-two tons of the six hundred tons of coal on board had been consumed. The fort on Bedloe's Island saluted the steamer with twenty-six guns, answering to the number of States of the Union at that time.

"'It had been agreed among us,' says one passenger, 'some days previously, that before we left the ship one of the tables should be christened Victoria, the other the President. Wine and fruit had been set upon them for this purpose: we were standing round the former of them; the health of Britain's Queen had been proposed; the toast was drunk; and amidst the cheers that followed, the arm was just raised to consummate the naming, when the fort opened its fire. The fire was electric. Our colors were lowered in acknowledgment of the compliment, and the burst which accompanied it from our decks—drinking the President and the country, and breaking wine again—was more loud and joyous than if at that moment we had unitedly overcome a common enemy. Proceeding still, the city became more distinct,—trees, streets, the people,—the announcement of the arrival of the ship by telegraph had brought thousands to every point of view upon the water-side; boats, too, in shoals, were out to welcome her, and every object seemed a superadded impulse to our feelings. The first to which our attention was now given was the "Sirius," lying at anchor in the North River, gay with flowing streamers, and literally crammed with spectators,—her decks, her paddle-boxes, her rigging, mast-head high! We passed round her, receiving and giving three hearty cheers, then turned towards the Battery. Here myriads seemed collected,—boats had gathered around us in countless confusion, flags flying, guns were firing, and cheering again,—the shore, the boats, on all hands around, loudly and gloriously, seemed as though they would never have done. It was an exciting moment,—a moment which, in the tame events of life, finds few parallels: it seemed the out-pouring congratulations of a whole people, when swelling hearts were open to receive and to return them. It was a moment of achievement! We had been sharers in the chances of a noble effort, and each one of us felt the pride of participation in the success of it, and this was the crowning instant. Experiment then ceased; certainty was attained; our voyage was accomplished.' In explanation of the allusion in the above to the 'Sirius' we may here state that this steamship, which had sailed from Cork before the 'Great Western' left Bristol, had arrived a day or two before the latter vessel; but the 'Sirius' only partially used her engines, not having stowage for sufficient fuel to keep them constantly plying."

1839.—The Charleston (S. C.) *Mercury* says, August, 1839, "Major

John Lind, of Charleston, S. C., an officer of the United States Engineers, is justly entitled to the credit of the application of the *screw* in the place of the paddle-wheel to the steamboats. More than five years since[11] he explained the principle, and experimented successfully with a small model boat on the canal near Washington City."

1839.—The New Jersey *Journal*, August, 1839, says, "Mr. Samuel Dow, of Elizabethtown, upward of *twenty years since*, made two small boats from twenty to twenty-five inches in length, one with a screw, and the other with paddle-wheels, in order to test the superiority of the screw. Each had a mast and cord, the standing part of the latter fast to and wound around the shaft or axle, and over a sheave in the mast-head, with equal weight attached. At the going off the wheel would go ahead; but before the race the screw would over-haul and shoot ahead.

"Mr. Dow built a boat twenty-five feet in length, with a screw on each side, to ship and unship as might be advantageous. It was worked by four men with a crank and cog-wheels."

1839.—SAIL VESSELS TO BE PROPELLED BY STEAM.—The Norfolk *Herald*, October 7, 1839, says Mr. Benjamin Harris, of that borough, had conceived a plan by which sail-vessels of every description might be propelled with the aid of steam, by paddles operating vertically in the bottom of the vessel above the keel, connected with the machinery above by a perpendicular shaft working in a metal cylinder, constructed to exclude the water. In the larger class of ships, the boilers, engines, and all the machinery could be stowed away *below the water-line.*

Mr. Harris tested his idea on a skiff fourteen feet long and three wide, which, propelled by the hand, by a crank turning a paddle-wheel two and a half feet in diameter, made the rate of five miles an hour.

Many ingenious plans were proposed up to 1839, when the utility of the screw-propeller was fully demonstrated, and a number of screw boats were placed on the lines of inland navigation connecting Lake Ontario with the St. Lawrence.

THE "LONDONDERRY" OR "GREAT NORTHERN" SCREWS, 1842.—There is a good representation of the "Great Northern," which was launched the latter part of 1842, with sections of the stern showing the screw, in the London *Illustrated News*, for January 24, 1843. The vessel is represented as ship-rigged, with the smokestack aloft the mainmast and having a line of painted ports along her side. The paper states, "Her great length, breadth, and depth exceeds, we believe, the dimensions of any steam vessel ever in existence. She was built at Londonderry by Captain Wm. Coppin[12] (an experienced ship-builder

[11] The screw as a method of propulsion was devised nearly half a century earlier.

[12] Captain Coppin has obtained in England and in this country (March 28, 1882) a patent for a compound ship constructed of three hulls of narrow beam, the two

and inventor), and is a remarkable monument of marine architecture. She is propelled by the Archimedean screw, which works on each side of the rudder: the engine is of three hundred and sixty horse-power. No paddles are required, and but for the funnel which is seen amidships, she might pass for a square-rigged ship of the larger class. She has three masts with lower and upper yards, and is rigged in every respect like a frigate or sloop-of-war. We were favored by one of her officers with the following dimensions: Length from taffrail to stern, two hundred and seventy-four feet; beam, thirty-seven feet; depth, fifty feet. On her passage from Londonderry she ran upon an average thirteen and a half knots without her engine, which can be spared or used as circumstances may require. When it was necessary to put on the engine she ran nine knots head to wind. The space for storage is most capacious. Standing aft and looking forward on the orlop deck the distance seems immense, exceeding indeed the largest first-rate in the navy. With all this room there is at present a want of arrangement for cabins, but we understand she will be fitted up in the best style. With respect to her external appearance the vessel seems a huge monster steamer, but pleasing in her mould and trim. (This the cut shows.) A beautiful female figure is placed over the cut-water and her stern is richly decorated with carving, gold and color. In consequence of the heavy mast, yards, and rigging, she will require an immense quantity of ballast. At present it is not decided whether she is to run to and from Ireland or be employed in other service. During her stay many persons entered the dockyard to gaze upon this truly wonderful object."

Extracts from her log from Cowes to London, beginning December 25, 1843, and ending December 29, when she steamed into the East India port docks, which are given, show that her sailing qualities were not impeded by the screw propeller.

1842.—In March, 1842, Lieutenant W. W. Hunter, United States navy, took out a patent for a submerged *horizontal* wheel, for the propelling of steamers. The first essay was made in the canal at Washington, D. C., on a small boat called the "Germ." The result obtained was represented as so favorable it was determined by the United States government to build a wooden vessel of 1000 tons to test this method of propulsion. This vessel, named "The Union," was built at the Norfolk (Virginia) Navy-Yard, and was of the following dimensions: Length on deck, 184 feet 6 inches; beam on deck, 33 feet 6 inches; beam at wheels, 26; depth of hold, 16¾ feet; deep drop, 13 feet; displacement at 11 feet draft, 900 tons. *Engines,*—Two iron condensing

outer hulls being longer than the central hull, and the whole decked over and combined as one vessel. The centre vessel is entirely devoted to machinery and has a screw at both ends. The design bears promise of great speed and carrying capacity and great stability, but has not yet been put to a practical trial.

horizontal disconnected engines, built at the Washington Navy-Yard. Diameter of cylinders, 24 feet; strokes of piston, 4 feet.

The Hunter wheel consisted of a plain drum revolving in a horizontal plane beneath the water upon the sides or periphery of this drum; the paddles placed vertically and radically from the centre. In the Hunter wheel the paddles acted in the same manner as the Orsman paddle-wheel, excepting that they revolved horizontally instead of vertically.

"The Union" was rigged as a three-masted schooner, was never off the United States coast, and did but very little steering, and never after several alterations attained a speed of over six knots. Her total cost with alterations was $172,475. Her armament was four 65-pounders mounted in the centre of the vessel on swivels. After various trials she was put in orders and sent to the Philadelphia Navy-Yard, where her machinery and boilers were taken out and sold, and the hull turned into a receiving ship, and finally sold and broken up.

Two other vessels were built for the United States Navy with Hunter's submerged horizontal wheels,—viz., the "Hunter," a small vessel, lost at Sacrificio on her first voyage, in 1841, and the "Allegheny," an iron vessel of large tonnage, but which was only partially a success.

1843.—THE "GREAT BRITAIN."—The keel of the "Great Britain," built at Bristol from designs and on calculations made by Mr. Brunel, was laid down in July, 1839, and launched on the 19th of July, 1843, His Royal Highness Prince Albert, the Prince Consort, honoring the event with his presence. The "Great Britain" was originally intended for a paddle-steamer, but the company having been unable to induce any forge-master to undertake the forgings required for the paddle-shafts, necessity compelled the adoption of the screw-propeller. After her launch she was imprisoned several months in Cumberland dock, Bristol, owing to the locks being narrower than the ship, which necessitated their being widened. She was released from her long and ludicrous durance December 12, 1844, and early in 1845 steamed round to London. Her propeller was fifteen and a half feet in diameter. She was of large dimensions for the time, having an extreme total length of 322 feet, 51 feet width of beam, 32 feet 6 inches depth of hold, and 3448 tons burden by the old measurement. The "Great Britain" was among the first ocean-going steamships built of iron, and also among the first of that now numerous class navigated by a screw propeller. Originally she had six masts, which were afterwards reduced to three. The screw was worked by engines of 1000 horse-power, but were changed to engines of 500 horse-power nominal. She was intended to be employed between Bristol and New York as the companion ship of the "Great Western." Besides being very strongly framed, she was divided into *six water-tight* compartments, which proved their utility when on her voyage from Liverpool to New York, with one hundred

and eighty-five passengers on board, she was stranded on the 22d of September, 1846, in Dundrum Bay, on the Irish coast, where she lay till the 25th of August, 1847, exposed to all the storms which swept that rugged and tempestuous coast. When floated off she was found to have sustained little or no damage. During the Crimean war she was employed by the British government as a transport, and afterwards run to Australia as a passenger-ship, with machinery and equipments modified to suit the service. She was still on that route in 1876.[13]

The "Great Western" ran regularly between Bristol and New York till the end of 1846. In 1847 she was sold to the West India Royal Mail Steam Packet Company, and was considered one of their best vessels. She was broken up in 1857, at Vauxhall, being unable longer to compete profitably with the new class of steamers.

1838.—THE "LIVERPOOL."—The "Liverpool" was built in the city for which she was named, and was dispatched to New York, October 20, 1838, by Sir John Tobin, a well-known merchant, and put back to Cork, October 26. She again proceeded on her voyage on the 6th of November, and made the passage in sixteen and a half days, arriving at New York November 23. She was at first of 1150 tons, but her tonnage was subsequently increased to 1543, and she obtained the name of the "Great Liverpool." She made in all six voyages to and from New York, when she was transferred to the Peninsula and Oriental Company, and in 1846 was totally wrecked off Cape Finisterre.

[13] This vessel, which has a history of more than ordinary interest, was yesterday offered for sale by Mr. C. W. Kellock (Messrs. Kellock & Co.) at their salesroom, Walmer Buildings, Water Street, and the event attracted a very large attendance of gentlemen who are closely identified with the shipping interests of the port. The "Great Britain," lying in the West Float, Birkenhead, was described in the "bill of particulars" as of 3270 gross tonnage, and 1795 tons net register. It is further stated that "she was for many years in the Australian trade, and well-known by her rapid passages as a most successful ship. Her construction is of great strength, and the iron used was Low Moor of the finest quality. For the cattle trade across the Atlantic she is admirably adapted, her high 'tween decks and side ports affording grand ventilation; she can carry live stock on three decks. For a sailing ship her beautiful lines peculiarly adapt her, and with the machinery taken out she is calculated to carry 4000 tons dead weight. Her engines are by J. Penn & Sons, of Greenwich, and are in good condition; her boilers by Fawcett, Preston & Co., of Liverpool; and though this steamer has been built many years, her iron was so good, and strength of construction so great, with a certain outlay she could be made a most desirable merchant ship. Dimensions,—Length over all 325 feet, breadth 50-6 feet, depth 31-5 feet." The bidding began at £2,000, then went to £5,000, and before long £6,500 was offered. There being no advance on this price, Mr. Kellock announced that the vessel was withdrawn.—*Liverpool Mercury*, July 29, 1881.

GEORGE H. PREBLE,
Rear-Admiral U.S.N.

(To be continued.)

AMONG OUR CONTEMPORARIES.

It is evident that some climatic conditions have existed in the neighborhood of the Antarctic pole for the last few years, which have caused masses of ice to appear in frequented waters, by the side of which our usual northern icebergs are as mole-hills to mountains. These have been reported by masters of vessels making passages in the extreme south that there can be no mistake about it, even allowing for imagination and exaggeration. No doubt many a ship reported "missing" found her fate upon or among these ice masses. Such being the case, it stands to reason that the present would be a favorable time for exploration towards the South Pole, and efforts have been made for some time to have the English government undertake such a mission, and endeavor to discover whether a great Antarctic continent, with its lofty volcanic mountain-ranges, does really exist, and, incidentally, what new hunting-grounds for seals and cetaceans are to be found.

In this connection it is interesting to note that, in November and December of last year, Mr. Larsen, the master of a Norwegian steam whaler, came upon the Antarctic land, the conditions being most favorable for doing so. Only the year before the whalers had found the sea packed with ice almost to the extreme northern part of Graham's Land, but Larsen was enabled by the departure of the ice to steam along this land for two hundred and thirty miles, most of it a few miles west of 60 degrees west longitude, Greenwich. Right at the Antarctic Circle is a very high peak, most of which was bare of snow. Larsen landed on Seymour Island, finding myriads of penguins, the walking being very difficult from the roughness of the country. About eighty miles north of the Antarctic Circle Larsen discovered a chain of five small islands, running northwest and southeast, on two of which were active volcanoes. The most northern is about ten miles from the main-land. The most southern point reached by Larsen was in 68° 10′ S. Had he advanced a few miles farther it would have been necessary to turn quite abruptly to the east, for he saw the shore line bend around till it ran almost east and west, and behind it was high land covered with snow.

Larsen came from the South to the Falkland Islands, and thence sent home an abstract of his log, which was forwarded by Mr. Chris-

tensen, of Sandifjord, Norway, to Dr. John Murray, formerly a member of the "Challenger" Expedition, who published the short log in the Scottish Geographical Magazine. A more extended report will no doubt be made as soon as the vessel gets home.

In these regions no right whales have been discovered,—the ones which are so prized in these times, when bone commands such a price as it does,—but hunchbacks and finners were in plenty, but most difficult to kill and secure.

An interesting account was lately published in the daily papers of General Braddock's sash, which is said to be in the possession of Mrs. Bettie Taylor Dandridge, of Winchester, Virginia, the only surviving daughter of President Zachary Taylor. Mrs. Dandridge supposed the sash to be lost, but after a long search it was recovered. The valuable relic was found carefully wrapped up in linen, and labeled "Braddock's Sash," and was found with the two military sashes belonging to General Taylor. These, with other personal effects, are in a chest in his daughter's possession.

"The sash is of very dark red, soft silk, some twelve feet long by four in width, and near the centre are three dark, black stains, each as large as a woman's hand, the marks of General Braddock's life blood."

It appears that this relic had been in the possession of General Gaines, but we are not told how it came there. At any rate, General Gaines sent the sash to General Taylor just after his brilliant actions on the Rio Grande, in 1846. "General Taylor took the sash and examined it carefully. It was of unusual size, being quite as large when extended as a common hammock. In the meshes of the splendid red silk that composed it was the date of its manufacture, '1707,' and although it was one hundred and forty years old, save where the dark spots stained it with the blood of the hero who wore it, it glistened as brightly as if it had just come from the loom. The unusual size of the sash being noticed, General Worth, who had joined the party in the tent, mentioned that such was the old-fashioned style, and that the soldier's sash was intended to carry, if necessary, the wearer from the field. It was mentioned in the conversation that after General Ripley was wounded at Lundy's Lane, his sash, similar in form, was used as a hammock to bear him from the field, and that in it he was carried for several miles, his body swaying between the horses to which the ends of the sash were securely fastened."

Winthrop Sargent, in his well-known work on Braddock, published by the Pennsylvania Historical Society in 1855, repeats the history of the sash with the date woven in it just as above given: "The sash in which the body of the general was carried from the field is said to be yet preserved in the family of General Taylor, to whom it was presented during the Mexican campaign through the intervention of

General Gaines. Of its history during the interim nothing is said." Lieutenant Orme, of the Coldstream Guards, who served as one of Braddock's aides-de-camp, says: "The general had four horses shot under him before he was wounded, which was towards the latter end of the action, for when the general was put in a waggon," etc. The fatal ball passed through the right arm into the lungs.

In the appendix to Sargent's book he quotes from the "Apology for the Life of George Anne Bellamy,"—a person who knew Braddock thoroughly,—who says: "This great man having been often reproached with brutality, I am induced to recite the following little anecdote, which evidently shows the contrary. As we were walking in the park one day we heard a poor fellow was to be chastised, when I requested the general to beg off the offender. Upon his application to the general officer, whose name was Dury, he asked Braddock, how long since he had divested himself of brutality and insolence of his manners? To which the other replied, 'You never knew me insolent to my inferiors. It is only to such rude men as yourself that I behave with the spirit which I think they deserve.'"

As a specimen of the "chastisements" which went on in the British army in those days, we may say that Orme records in his journal the sentence of a man to one thousand lashes, "but part of punishment remitted."

The "Official Records of the War of the Rebellion" have reached the forty-fourth volume, while the maps number now upward of twenty. The last volume deals with the march from Atlanta to Savannah, and the capture of that city. A passage in General Sherman's report of January 1, 1865, to the chief-of-staff at Washington, is so characteristic that we are tempted to quote a few lines. After bestowing praise upon the generals under his command for their intelligent execution of his plans for the successful march, he says: "As to the rank and file, they seem so full of confidence in themselves that I doubt if they want a compliment from me, but I must do them the justice to say that, whether called to fight, to march, to wade streams, to make roads, to clear out obstructions, build bridges, make corduroy, or tear up railroads, they have done it with alacrity and a degree of cheerfulness unsurpassed. A little loose in foraging, they 'did some things they ought not to have done,' yet, on the whole, they have supplied the wants of the army with as little violence as could be expected, and as little loss as I calculated. Some of these foraging parties had encounters with the enemy which would in ordinary times rank as respectable battles. The behavior of our troops in Savannah has been so manly, so quiet, so perfect that I take it as the best evidence of discipline and

true courage. Never was a hostile city, filled with women and children, occupied by a large army with less disorder, or more system, order, and good government." The writer had the pleasure and privilege of being a shipmate of the general's for several weeks,—at the time he made his European tour,—and can fancy he hears him talking in his fluent, earnest way, instead of reading the words of the official report of a great achievement.

The Commonwealth of Pennsylvania has issued a handsome book in two volumes, containing together about eleven hundred pages, and entitled "Pennsylvania at Gettysburg." It contains the addresses and reminiscences of the orators selected by the survivors of the different Pennsylvania regiments at the dedication of the monuments erected to mark the position of each organization during that stupendous battle. The monuments are of granite and bronze, and cost the State fifteen hundred dollars apiece. As the designs were mostly selected by the survivors, they vary much, some being in rather doubtful taste, but the majority very appropriate, and some of them strikingly fine. Each one is represented by a full-page print of great excellence.

The book is appropriately begun with Mr. Lincoln's address at the dedication of the cemetery at Gettysburg, one of the most perfect of addresses of any time or language, and one which cannot be too often brought to notice. " . . . But, in a larger sense, we cannot dedicate, we cannot consecrate, we cannot hallow this ground. The brave men, living and dead, who struggled here, have consecrated it far above our poor power to add or detract. The world will little note nor long remember what we say here, but it can never forget what they did here. It is for us living, rather, to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us; that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion; that we here highly resolve that these dead shall not have died in vain; that this nation, under God, shall have a new birth of freedom, and that government of the people, by the people, for the people, shall not perish from the earth."

The addresses, like the monuments, vary much in style and interest,—but almost all are calculated to stir the blood in those of us who remember those days, besides bringing out in various lights the achievements of regiments and even of individuals.

There are also many pages devoted to statistics, rosters, and other matter which adds to the interest and value of this book, especially as the statements are derived from official sources.

It would be a difficult and certainly an invidious task to select

instances of devotion and bravery—both regimental and individual—from these pages, but we select at hazard the statement that in this battle the One Hundred and Forty-ninth Pennsylvania Volunteer Infantry lost, in killed and wounded, three hundred and thirty-six out of four hundred and fifty, or seventy-five per cent., and many other regiments, not only of that State, but of others, had almost equal losses. The Confederate losses were also frightful. General Heth speaks of losing twenty-seven hundred out of seven thousand (nearly forty per cent.) in twenty-five minutes.

In the battle of Gettysburg Pennsylvania had sixty-eight regiments of infantry and one emergency regiment, ten regiments of cavalry, and seven batteries of artillery. Many of the regiments were, however, so depleted from recent fighting or other causes as to be almost skeletons,—or, at best, battalions. One and all did they do their duty,—as was natural when fighting for their firesides on the soil of their own State,—and the book of which we have been speaking is a noble tribute to brave men.

The story of old John Burns has often been told in connection with the battle, but in various ways. Here is the true version, given in the address of Lieutenant-Colonel Chamberlin, of the One Hundred and Fiftieth Pennsylvania: "While we were watching and waiting, our attention was called to a man of rather bony frame and more than average stature, who approached from the direction of the town, moving with a deliberate step and carrying in his right hand an Enfield rifle at a trail. At any time his figure would have been noticeable, but it was doubly so at such a moment from his age, which evidently seemed threescore and ten, and from the somewhat startling peculiarity of his dress. The latter consisted of dark trowsers and waistcoat, a blue swallow-tail coat with burnished brass buttons, such as used to be affected by well-to-do gentlemen of the old school about forty years ago, and a high black silk hat, from which most of the original gloss had long departed, of a shape only to be found in the fashion-plates of a remote past. The stiff stock which usually formed a part of such a costume was wanting, presumably on account of the heat, and no neck-cloth of any kind relieved the bluish tint of his cleanly-shaven face and chin. As his course brought him opposite the rear of the left wing, he first met Major Chamberlin and asked,—

"'Can I fight with your regiment?' The major answered affirmatively, but, seeing Colonel Wister approaching, said, 'Here is our colonel, speak to him.'

"'Well, old man, what do you want?' bluntly demanded the colonel.

"'I want a chance to fight with your regiment.'

"'You do? Can you shoot?'

"'Oh, yes,' and a smile crept over the old man's face which seemed

to say, 'If you knew that you had before you a soldier of the War of 1812, who fought at Lundy's Lane, you would not ask such a question.'

"'I see you have a gun; but where is your ammunition?'

"Slapping his hands upon his bulging trowsers' pockets, he replied, 'I have it here.'

"'Certainly you can fight with us,' said the colonel, 'and I wish there were many more like you.'

"He advised him, however, to go into the woods to the line of the Iron Brigade, where he would be more sheltered from both sun and bullets, with an equal chance for doing effective work. With apparent reluctance, as if he preferred the open field, he moved towards the woods, and history has written the name of John Burns in the roll of the world's heroes, and his brave conduct is imperishably linked with the glories of Gettysburg."

Among the many monuments placed by the Commonwealth of Pennsylvania to mark the events of the great battle at Gettysburg is one over the grave of a private soldier. It commemorates the action of the Twenty-first Regiment of Pennsylvania Cavalry, and marks the spot where fell Sergeant George W. Sandoe, who fell on the 26th of June, 1863,—the first man of the Union forces shot in the various skirmishes and fights which preceded the battle. He was in the first line of vedettes on that day. Born in Adams County, within a few miles of the place where he met his death, he was only one of many who fell in turning back the tide of invasion from his native State. There were a number of soldiers in that battle who came from Gettysburg itself.

In a report published in the appendix to the "Annual Register of the Society of Colonial Wars" we find the following interesting account of the manner in which recruiting was carried on in Virginia one hundred and fifty years ago. When the expedition against Carthagena (commonly called Admiral Vernon's Expedition) was decided upon, a requisition was made by George the Second upon all the American colonies north of the Carolinas to send four battalions to strengthen the military part of the force.

William Gooch, lieutenant-governor of Virginia, under an act passed by the Assembly in May, 1740, proceeded to recruit the men. The act declared "that there are in every county within this colony able-bodied persons fit to serve his Majesty, who follow no lawful calling or employment." (They must have been something of the order of the "Industrials" of the present time.)

It was accordingly enacted that it may be lawful for the justices

of the peace of every county in the colony, or any three or more of them, at any time before December 1, 1740, within their respective counties, to raise and levy such able-bodied men as do not follow or exercise any lawful calling or employment, or have not some other lawful and sufficient support and maintenance, to serve his Majesty as soldiers in the war. The assistance of the sheriffs, under-sheriffs, and constables in carrying the act into execution was directed, whose duty it was to search out such persons, bring them before the justices, and if they were found to be within the act they were to be immediately enlisted as soldiers, delivered to the nearest constable, to be conveyed from constable to constable until they should be brought to the lieutenant-governor at Williamsburg. Any constable allowing an escape was to be fined five hundred pounds of tobacco, and persons so escaping were to be punished as deserters.

It was specially provided, however, that nothing in the act should extend to the taking or levying any person to serve as soldier who had any vote in the election of a burgess or burgesses to serve in the General Assembly of the colony, or who was or should be an indented or bought servant.

Under these regulations at least three full companies were raised in Virginia, one of the captains being Lawrence Washington, the brother of George Washington, who named the property which afterwards descended to his illustrious brother after his old friend and companion in arms, Admiral Vernon.

In New York and Massachusetts troops were raised for this expedition, but there is no record of recruiting or commissions in any of the other colonies "north of the Carolinas."

Virginia seems to have thought it a fine chance to make tramps and ne'er-do-wells food for powder.

Vernon's expeditions to Porto Bello (where he was successful) and to Carthagena (which proved a fiasco) created great enthusiasm on both sides of the Atlantic, and more medals were struck to commemorate these events than would now be thought necessary after a general European war.

It seems hard that Vernon, after being the idol of the hour, should have fallen into political trouble during the English rebellion of 1745, which ended in his being struck from the list of admirals.

In the April number of this magazine we noticed the fact that a herd of reindeer, and experienced Siberians to teach the Alaskans to handle them, had been placed on Alaskan soil. The difficulties encountered in the business from the superstitions of the Siberians were also alluded to. When, in 1891, the small herds were turned loose on two of the Aleutian islands it was looked upon as a simple experiment;

but now its success seems well assured, as the herds have very much increased, and there is little doubt that, in a few seasons, the citizens will have a source of food in the milk and flesh of these animals to replace the walrus, seals, and whales, which have disappeared to such a degree that the natives have died in numbers from starvation. A correspondent of the Philadelphia *Times* tells us of a new development in connection with these reindeer. It appears that the Siberians, brought over to herd the animals and to teach the Esquimaux how to handle them, became home-sick and dissatisfied, and their services became of little value. A way out of the difficulty has been found, however, and promises well. This is no less than the importation by our government of five families of Lapps,—the subarctic race of nomads, consisting of six men and eleven women and children,—who arrived in New York in May, and will be established at Port Clarence, where the reindeer now are, before these lines are printed. Port Clarence is a village sixty miles from Cape Prince of Wales, which is the most westerly point of North America, with a magnificent harbor.

The Lapps brought with them eleven dogs, bred to herd and protect the reindeer, much as shepherd dogs guard flocks of sheep.

When the deer were first brought over it was predicted—among other things which were to happen—that the Alaskan dogs would kill them. Experience has shown that Alaska is even more favorable to the deer than Siberia. Our Arctic province is a vast natural range for them, the supply of food being inexhaustible, while the dogs did not trouble the deer much. During the first year only five had to be shot on that account, and they soon learned not to touch the new-comers. Furthermore, they can outrun the dogs, as a rule, and can fight them effectively with fore-feet and horns.

Valuable as a large stock of reindeer must be for military and commercial purposes,—finding their food upon the *tundra* at any time in winter by scraping away the snow which covers the moss,—their great use will, of course, be to furnish food; otherwise the native population must soon disappear. On St. Lawrence Island, a few years ago, the entire native community perished in one winter. Whaling vessels had sold them whisky, and they spent the summer time in carousing, neglecting to gather their usual stores of food. When winter came they all died of hunger. Food is now often so scarce that the women nurse their children until they are five years old, and it is stated that many infants are killed by their parents, lest there be too many mouths to feed. To make a fishing-boat (necessary to their livelihood in their present condition) requires four walrus hides, and the material is no longer obtainable. But if, by keeping domestic animals, like the reindeer, these people are rendered independent of hunting and fishing for a livelihood, they will have made a great step towards civilization. "A notion of the peaceful character of these Eskimos," says the writer

whose article we have been noticing, "is afforded by the fact that they have never attempted to touch the reindeer at Port Clarence, where, half-clad and hungry, the lives of only two white men have stood between them and abundance of food and clothing. What spot on earth where white men were starving would witness this condition long? Every deer would be killed, every particle of food distributed, and the act would be justified by public opinion."

If the deer herds increase as rapidly as they have been doing, it is the intention to place herds of about one hundred each at Cape Prince of Wales, Golovin Bay, Nulato, on the Yukon River, and St. Lawrence Island.

An interesting little book, lately published in Harper's "Black and White Series," is entitled "Travels in America One Hundred Years Ago." By Thomas Twining.

Mr. Twining, who appears to have attained high position and much wealth in India at an early age, when about to return home to England, determined to do so by way of the United States, in which youthful country he felt much interest. Accordingly, he sailed from Calcutta in an American ship with a Quaker captain bound to Philadelphia. Mr. Twining was struck with the youth and small number of the crew, who were twenty-two in number for a ship of three hundred tons, and was still more surprised at their cheerful alacrity and the absence of oaths, threats, or vulgar language in carrying on duty. It turned out that the youths were almost all the "sons of respectable families of Philadelphia and Baltimore, who had come to sea under Captain Ashmead for the purpose of being instructed in navigation by this experienced seaman preparatory to their being officers and captains themselves."

This well-known practice in the early days of the republic gave us the men who for so many years showed our flag in every sea. Coming on our coast, Mr. Twining gives us a piece of information about the Gulf Stream which is interesting as showing the state of physical geography at the time. He says: "The common opinion is that this current is occasioned by the constant flow of the Mississippi River into the Mexican Gulf. This explanation, however, appears by no means satisfactory, since the volume of the stream, sixteen leagues in width, greatly exceeds that of the Mississippi. Another hypothesis considers it as the continuation of the current which sets round the Cape of Good Hope from the Indian seas, and, traversing the Atlantic Ocean nearly in the line followed by our ship, enters the Gulf of Mexico, whence it re-enters the ocean *with* the waters of the Mississippi and follows the American coast till finally dissipated in the Northern seas." The conjecture about the equatorial current, or a part of it, finding its way into

and out of the Caribbean Sea is good enough, but the "common opinion" as to the Mississippi is quite surprising.

When Mr. Twining reached Philadelphia, then the seat of government, he had an opportunity of meeting General Washington, Mr. Adams, Mr. Gallatin, Dr. Priestley, Bingham, the Barings, De Noailles, Volney, and a host of other celebrities. Then he went to Baltimore, where he had a pleasant visit and much hospitality. But, possessed with a great desire to see the future Washington City, he pushed on in the stage-wagon, and, after being nearly bumped to death over what were called "roads," he finds the capital to consist of the partially completed congressional halls and a brick tavern near it just under roof. He found Georgetown quite an active business place, and Alexandria a most bustling and progressive one, and prophesies that even if the Federal city ever managed to secure a population it can never hope to compete with Alexandria or even with Georgetown. Much the same prediction is made in regard to Newcastle, Delaware, as against Philadelphia. Georgetown is now a part of Washington, while Alexandria and Newcastle are about as sleepy and unprogressive places as any to be found in all our broad land.

Mr. Twining appears to have been a singularly unprejudiced as well as a very intelligent man, and it is a pity that he could not have paid us another visit,—say fifty years after the first,—and left us another journal of impressions and experiences. This he might very well have done, for he survived until 1861, sixty-five years from the time of his short visit to our shores.

In former times all knowledge of naval affairs in our country was confined to a small number,—as it really is, in fact, at present, although many good people do not think so. But now every movement of naval vessels, every accident, every launch, every trial-trip is telegraphed from one end of the country to the other. Every editor and reporter seems to be endowed with a faculty for naval criticism and professes an intimate knowledge of naval affairs. That these facts are often unfounded and their praise or blame equally undeserved is a matter which goes without saying; but, on the whole, this revival of general naval interest is a good thing and must redound to the good of the navy in the end. It forces our legislators to at least assume some interest in such subjects, while the flash-light turned upon our naval yards and naval vessels keeps the officers well up to the mark. Formerly the army was the branch of the service which was best known to the people at large, but, thanks to the telegraph and the newspapers, the navy is now quite as much *en évidence* as the sister service, which, we repeat, is a good thing, in spite of the ignorance or misapprehension of facts so often spread broadcast by this means.

But there is one way in which the press does distinct harm, and that is the publishing with "head-lines" of the opinion of some wiseacre that "such and such a man-of-war is probably missing," as was done this summer, and has been done almost every year. The uneasiness and alarm thus caused to relatives and friends of officers and men are as nothing to the reporter who gets his certain number of lines. Quite lately such reports were circulated in regard to the "Lancaster" and the "Marion." The "Marion" was quietly coaling at Honolulu while the rumor was going the rounds, while the good, sleepy old "Lancaster" was calmly pursuing her way under canvas *via* the North East Trades, to arrive safely home in the fullness of time.

Many years ago the writer sailed from Philadelphia in the "Congress," then allowed to be the finest sailing frigate in our navy, and perhaps in the world. She had about twenty-five officers and over five hundred men. A large proportion of the latter hailed from Philadelphia, having lately been discharged by another frigate on her return from the same station to which the "Congress" was bound. A few days after the latter sailed the newspapers had their usual head-lines with—"Frigate 'Congress' Foundered," "Frigate 'Congress' Lost at Sea," etc. Shocked and grieved beyond measure, some of the friends of those on board instituted a searching inquiry and found that some idiot had told a reporter that the 'Congress' had gone down. The reporter hunted up the idiot for the sake of his own vindication, and when the creature was found, he said, "Oh, it was a joke! I said she had gone down, and she *had* gone down Delaware Bay." Afraid that some one would get ahead of him, the reporter had put in his "news," and without the slightest inquiry or investigation it was published, thus causing weeks of anxiety and sorrow to many a wife and mother.

Some little while ago *Truth* remarked: "A curious expression occurs in the form on which captains of her Majesty's ships certify as to the conduct of officers under Article 696 of the Queen's Regulations (1893). The captain is required to "insert" "the conduct of the officer, including the fact of his sobriety, if deserving of it."

Mr. Labouchere then says, "I should have thought that the fact of a man's sobriety would be taken for granted unless the contrary was stated; but the admiralty view seems to be that sobriety is an exceptional virtue, only to be accorded in extreme cases. But, however that may be, I am told that some captains consider that in certifying under this form they ought to be guided by the amount of the officers' liquor bills. That this is wrong, no one, I should think, would question. One man may be drunk on a shilling's worth of liquor, while his neighbor could consume half a crown's worth without forfeiting his title to sobriety. Whatever may be said of this keeping

of a 'liquor record' against officers, it certainly ought not to be used for this purpose. Speaking as a mere landsman, I should have supposed that the fact of a man having paid for a certain quantity of liquor is not sure proof that he has himself consumed it."

One-man judgment is very fallible, and apt to be influenced by several motives, and the experience of military and naval courts shows that different people have different standards as to what constitutes drunkenness. It is notoriously a difficult thing to prove a man drunk, unless, indeed, he becomes "incapable." As to the matter of judgment or opinion, we are reminded of the testimony of dear old Captain McC., of our navy, who was called upon to give testimony for or against the sobriety of a fellow-captain. McC. was himself one of the three-bottle men who flourished in those days. To the direct question, "Did you ever see Captain So-and-So drunk?" he answered, after a pause for consideration, "Yes, gentlemanly drunk, as I have seen *all* of this honorable court."

The other day we referred in these notes to the new Liberty Bell, and made certain statements in regard to it which were derived from various notices which have appeared in the public press during the last year or two. A prominent official of the society which had the bell cast assures us that many of our statements were unfounded; that the Daughters of the Revolution are *not* responsible for the bell; that relics of value were *not* melted up for it, but only filings taken of the more valuable ones; and that, far from being ignored at the World's Fair, it was much visited and was the central point of many functions, both there and at the recent ceremonies in New York, in memory of Kossuth.

As this authoritative statement comes to us from head-quarters, we have only to regret that we have been misled by the paragraphs to which we have referred into making a statement which seems to have given offense, but, at the same time, choose to retain our own opinion as to the method of showing patriotism involved in such an undertaking.

E. SHIPPEN.

NAVAL AND MILITARY NOTES.

NOTES AND DATA ON NAVAL AND MILITARY MATÉRIEL AND ALLIED SUBJECTS.

It is the intention to collect and publish in this department of the "United Service" all information obtainable from current publications and other available sources concerning ships, guns, armor, explosives, small-arms, military and maritime affairs, and kindred subjects. As the data are derived largely from unofficial sources, strict accuracy cannot be expected; but all reports will be carefully examined and compared with others on the same subject, and it is hoped, by this means, to attain fairly correct results. Erratum notices will be published whenever errors are discovered in data previously given. As the development of the present plans for collecting information progresses, it is hoped to secure fuller and more authentic reports.

ABBREVIATIONS USED IN THE NOTES.

b.l. = *breechloading guns of ordinary (not rapid-fire) type.*
cm. = *centimetre.*
f.a.m.l. = *fore and aft midship line.*
I.H.P. = *indicated horse-power.*
l.w.l. = *load water-line.*
m.g. = *machine gun.*
mm. = *millimetre.*
pr. = *pounder (as 6-pr.)*
r.c. = *revolving cannon.*
r.f. = *rapid-fire.*
r.f.g. = *rapid-fire gun.*

WAR-SHIPS AND TORPEDO-BOATS.

Great Britain.

The torpedo-boat destroyers so far ordered are under construction as follows:

Yarrow, Poplar: *Charger*, *Dasher*, *Hasty*, *Havock* (completed), *Hornet*.

Thorneycroft, Chiswick: *Ardent*, *Boxer*, *Bruiser*, *Daring*, *Decoy*.

Palmer, Jarrow-on-Tyne: *Janus*, *Lightning*, *Porcupine*.

Doxford, Sunderland: *Hardy*, *Haughty*.

Hawthorn, Leslie & Co., Newcastle: *Gurnard* (?), *Snapper*.

Hanna, Donald & Wilson, Paisley: *Fervent*, *Zephyr*.

Thomson, Clydebank: *Rocket*, *Shark*, *Surly*.

White, Cowes: *Conflict*, *Teazer*, *Wizard*.

Naval Construction & Armaments Co., Barrow: *Skate*, *Starfish*, *Sturgeon*.

Armstrong, Elswick: *Swordfish*.

Laird, Birkenhead: *Ferret*, *Lynx*, and two others not yet named.

Earle Shipbuilding Co., Hull: two not yet named.

Of the above, the *Havock* is completed. The *Daring* was launched November 25; the *Hornet*, December 28; the *Lynx*, January 24; and the *Ferret* some time in December. All, so far as known, except the *Havock*, are to be fitted with tubulous boilers. Yarrow, Thorneycroft, and White will, of course, fit those of their own well-known makes. The Barrow Company will use boilers designed and patented by the manager of their engine-works, Mr. Blechynden. These vessels are styled "torpedo-boat destroyers," but the method by which they will make good their claim to the title is not exactly clear. Their superiority in speed, especially in anything but a smooth sea, is practically certain to give them the power to overhaul any torpedo-boat afloat. But the superiority in armament is not so striking. There are plenty of torpedo-boats carrying

three 3-pounders. Against craft so vulnerable in all respects as are both boats and destroyers, the difference in power of the guns is hardly important. So that opposed to two boats, each carrying three 3-pounders, the "destroyer" would be quite likely to find her hands full. The replacing of the forward pair of 6-pounders by an equal weight distributed among pieces of lesser calibre, and consequently greater in number, would, in our opinion, render them more dangerous antagonists to their designed foes, and more likely to deserve their name.

The first-class protected cruiser *St. George* had her natural draft trial on January 25, with the following results: Steam pressure at boilers, 153.8 pounds; air-pressure, 0.09 inches; vacuum, 27.7 inches; revolutions, 100.0; I. H. P., 10,536; speed by patent log, 20.28 knots. The trial was, as usual, of eight hours duration. The vessel was very light, being *three feet five and one-half inches above her mean load-draught.* She therefore displaced only about 6000 tons instead of 7700, as designed. At a displacement of 7700 tons the horse-power developed would give about 19 knots. In a future number the performance on trial of the whole *Edgar* class will be given in tabular form.

In all of the recent gunnery trials of ships of the *Royal Sovereign* and *Centurion* classes it is noticeable that no attempt was made to fire the heavy guns, except within a point of the beam, and the question naturally arises, Why? A glance at the plans of these ships shows that, considering the size of the guns, their axes are very near the deck. Furthermore, the *Centurion* class has a good deal of sheer forward, so that the projectile fired from the gun at level hardly clears the deck at the stern. If the guns are too near the deck to permit of safe firing parallel, or nearly parallel, with the keel, it seems inexcusable. No possible improvement in sea-going qualities can compensate the ruining of the battery power. It could not have been done through ignorance, for the destructive effect of the powder blast from heavy guns upon a wooden deck, which does not rest upon an armor deck, or very heavy iron plating, has been pretty generally understood for some years. If direct fire ahead can, in these ships, be risked only in cases of greatest emergency, the gain in beam fire through mounting guns in pairs on the fore and aft midship line is more than counterbalanced by the loss in fire directly or nearly ahead. The worst specimen of barbette mounting that the editor has ever seen is on the Russian armored cruiser *Admiral Nakhimoff.* The forward barbette carries its guns so low, and the sheer of the forecastle is so great that it is impossible to fire the forward turret guns anywhere near level within 30 degrees of the line of keel without sending the projectile *through* the forecastle deck.

The following vessels were launched in England during 1893: *Astrea*, *Cambrian*, *Charybdis*, *Flora*, *Forte*, *Fox*, *Hermione*, all protected cruisers of 4360 tons; torpedo-gunboat *Dryad*, 1070 tons; torpedo-gunboat *Speedy*, 810 tons; torpedo-boat destroyers *Havock*, *Hornet*, *Daring*, *Lynx*, 220 tons; gunboat *Minto* for India, 930 tons; troopship *Warren Hastings.*

TALBOT AND ASTREA CLASSES: BOW-FIRE.—The Admiralty has directed that the forward 6-inch r.f.g. of the *Talbot* class (full description given in NOTES four months since) are to be so mounted that when trained directly ahead the projectiles will strike the water within 300 yards of the vessel's stern. If necessary, the guns are to be mounted on a raised platform. It is contended that, unless the guns can be fired at this angle of depression, they are practically useless for repelling an attack by armed boats. This is the reason given. But it is strongly suspected that the bow-guns of the *Talbot* class were to be mounted like those of the *Astrea* class. During the *Astrea's* gun trials, it was found when the forward 6-inch gun was fired directly ahead at level the projectiles barely cleared the stern. It was therefore decided to raise these guns about 6 inches by putting under the mounts an iron ring of that

thickness. The cost of making the alterations in the *Astrea*, *Bonaventure*, and *Cambrian* will be about £150 for each ship, but as these guns have not yet been installed on the *Charybdis*, *Forte*, *Flora*, *Fox*, and *Hermione*, the new fitting will cost much less in those vessels. In nearly all the recent British and some other foreign ships an attempt has been made to attain high freeboard forward and keep the weights down by low gun-mounts. The result is that the guns are too near the deck, and, even if the projectile safely clears the deck, there is still the powder-blast to be considered. (See remarks on page 288 concerning the mounts of the *Royal Sovereign*, *Centurion*, and *Nakhimoff*.)

HAZARD AND HARRIER.—Two more torpedo-gunboats of the *Dryad* class (described in the NOTES four months ago) were launched in February; the *Hazard*, at Pembroke, on February 17, and the *Harrier*, at Devonport, on February 20.

NIGER.—The *Niger* recently underwent her natural draft commission trial. The results, considered satisfactory, were: I.H.P., 2615; speed, 16 knots.

ROYAL SOVEREIGN AND MAJESTIC CLASSES: BILGE KEELS.—It has been decided to fit bilge keels to the new battle-ships building, and to the *Royal Sovereign* class if the keels now being fitted to the *Repulse* prove efficient.

TORPEDO-CATCHERS ORDERED.—The Fairfield Shipbuilding Company has received an order for two torpedo-catchers. The length will be 200 feet, and the speed 27 knots.

DECOY: LAUNCH.—The torpedo-catcher *Decoy*, a sister vessel to the *Daring*, launched in November, was launched from Thorneycroft's yard, Chiswick, February 7. Like the *Daring*, the *Decoy* is fitted with Thorneycroft water-tubulous boilers, and the contract requirement for speed is 27 knots.

FERRET: TRIAL SPEED.—The trial speed of the *Ferret* is reported to have been 26.8 knots. Like the *Havock*, the *Ferret* is fitted with locomotive boilers, and the speed requirement, 26 knots, is the same.

TRAFALGAR.—A correspondent of the New York *Herald* writes from Malta: "The *Trafalgar's* hull is again giving trouble. Before this ship left Portsmouth it was stated that she was structurally weak, and as soon as she arrived on the Mediterranean station her frames were straightened. Now it appears that before (?) she can be docked she will have to be straightened again. This was one of the ships over which the Portsmouth Dock-Yard made a record for celerity and cheapness. (She was quickly built, but was not cheap, as she cost more than any ship in the British navy except the *Ramillies* and the *Royal Oak*, and £23,000 more than her sister ship, the *Nile*, built at Pembroke Dock-Yard.) So cheaply, indeed, was she built that her armor-plates do not fit one another, and the crevices in the joints have been filled with cement, which is now working out.

WARRIOR.—The *Warrior* has been taken in hand and will receive a thorough overhauling and refitting, which will include new engines, a new battery, and some modifications of the upper works. Work was actually begun on her in February at the Portsmouth yard.

Two new gun-vessels, to be named the *Phœnix* and the *Algerine*, are to be laid down immediately at Devonport. They will be 185 feet long by 32 feet 6 inches broad, and at a draught of 11 feet 3 inches will displace about 1050 tons. Each will carry six of the new 4-inch 25-pounder and four 1.85-inch 3-pounder quick-firing guns. The speed will be about 14 knots. The *Tauranga*, now one of the Australasian Defense Squadron, was originally laid down as the *Phœnix*. The previous *Phœnix*, a steam sloop, was wrecked in September, 1882, off East Point, Prince Edward's Island. The last *Algerine*, a composite gun-vessel built at Belfast in 1880, was sold out of the service in 1892.

Messrs. Yarrow & Co., of Poplar, have just entered into a contract with

the Russian government to build a torpedo-destroyer which shall have a guaranteed speed of 29 knots. The highest speed reached by any existing vessel of the class of 28 knots, accomplished by the *Hornet*, belonging to her Majesty's government.

The Imperial Japanese government have at length decided to add to their navy two powerful armor-clad battleships, the construction of the vessel being placed with Messrs. Sir W. Armstrong & Co., of Newcastle, and the Thames Iron Ship-Building Company of London, and that of their propelling machinery with Messrs. Humphrys, Tennant & Co., of Deptford. The ships are to be of the Royal Sovereign type, and will have the following principal dimensions: Length, 370 feet; breadth, 73 feet; and a displacement of 12,250 tons, at which their draught will be 26 feet 6 inches. They are to be protected by an armor-belt for 226 feet of their length, the part covering the machinery and boiler-spaces being 18 inches thick, and at the ends 16 inches. They will also have a 2½-inch-thick protective deck extending from stem to stern. The propelling machinery will be twin-screw engines of the three-cylinder-triple-expansion type, to develop 14,000 indicated horse-power, the steam for which will be supplied by cylindrical boilers of the ordinary marine type, adapted for working with a moderate forced draught. The vessels will be armed with two 12-inch breech-loaders in 14-inch armor-plated barbettes, ten 6-inch quick-firing guns in casemates, and fourteen 3-pounder and ten 2½-pounder Hotchkiss quick-firers. Six torpedo-ejectors will also be fitted, and each vessel will have a powerful ram.

The officials at Devonport have received from the Admiralty drawings of two vessels to be built at Devonport Dock-Yard. At present they are referred to as Linnet No. 1 and Linnet No. 2, and will be classed as sloops and be similar to, though slightly larger than, the *Torch* and *Alert*, which are being built at Sheerness. Mr. W. H. White, Director of Naval Construction, has designed the Linnets, and their dimensions will be: Length, 185 feet; breadth, 32 feet 6 inches; mean load draught, 11 feet 3 inches; displacement at load-draught, 1050 tons. Their armament will consist of six 4-inch new 12-pounders and four 3-pounder quick-firing guns, some Maxim machine guns, and Whitehead torpedo-tubes. The coal capacity at load-draught will be 160 tons, but if necessary a considerably larger quantity of coal can be stowed on board. Both vessels are to be completed and ready for sea before April, 1896. The machinery has not yet been ordered. They will each cost about seventy thousand pounds, and the dock-yard officials are authorized to advance each ship to the extent of thirty-eight thousand six hundred and thirty-two pounds during the next twelve months.

The torpedo gun-boat *Hazard* has completed her contracted steam trials. On the eight hours natural draft trial on March 30, the mean horse-power developed was 2600, while on April 3 she made 3714 horse-power on a three-hour forced draft trial. The contract was for 3500 horse-power, and designed speed 19 knots, which was exceeded. The tonnage of this class of vessels is 1070 on a length of 250 feet and a breadth of 30 feet 6 inches. The draught is 9 feet. The coal capacity is 100 tons, which gives 2500 miles radius at 10 knots speed.

On March 19 the official trials of the torpedo-catcher *Hornet* took place in the estuary of the Thames. On the three hours trial the average speed was 27.628 knots an hour. The usual exhaustive tests of engines and steering apparatus were made, and everything worked satisfactorily. No vibration was felt at any speed, the boilers made ample steam at a mean air-pressure of 1.5 inches, and there was no heating of any part of the engines.

The Admiralty have placed the contracts for the six second-class protected cruisers recently authorized. Two are to be constructed by the Fairfield Company, two by the London and Glasgow Company, and two by the Naval Construction and Armaments Company of Barrow-in-Furness. These vessels are

to be 350 feet long, 54 feet beam, and at 20½ feet draught will displace 5600 tons. They are larger than the *Apollo* class, and embody several improvements in design. They have greater freeboard, more coal endurance, having bunker capacity for 550 tons, instead of 400. They will have five 6-inch and six 4.7-inch, as well as several smaller rapid-fire guns. The engines of this class will be slightly more powerful than those of the *Apollo*,—9600 horse-power under forced draft, giving a speed of 19.5 knots, and under natural draft 8000 horse-power and 18.5 knots.

France.

The following-named vessels were launched in 1893: *Charles Martel*, battleship, 11,882 tons, at Brest; *Jauréguiberry*, battle-ship, 11,818 tons, at La Seyne; *Tréhouart*, battle-ship, 6610 tons, at Rochefort; *Charner*, armored cruiser, 4745 tons, at Rochefort; *Chasseloup-Laubat*, *Bugeaud*, and *Friant*, protected cruisers, 3722 tons, the first two at Cherbourg, the third at Brest; *Suchet*, protected cruiser, 3430 tons, at Toulon; *Fleurus*, torpedo-cruiser, 1306 tons, at Cherbourg; and the torpedo-gunboat *D'Iberville*, 935 tons, at Saint Nazaire.

The following-named vessels were laid down during 1893: *D'Entrecasteaux*, armored cruiser, 8114 tons, at La Seyne; *Catinat*, protected cruiser, 3988 tons, at Graville yard, Havre; *D'Assas*, *Duchayla*, *Cassard*, protected cruisers, 3952 tons; *Casabianca*, torpedo-gunboat, 943 tons, at Bordeaux; *Morse*, submarine boat, Cherbourg; *Surprise*, gunboat, 626 tons, at the yard of M. Normand, Havre.

The second-class, protected cruisers *D'Assas*, *Duchayla*, and *Cassard* are sister ships in all respects. They were all laid down in 1893, the former two at the government dock-yard, Cherbourg, and the latter at the Ateliers et Chantiers de la Loire. The partial details and descriptions already given the NOTES are not in all respects exact. The latest and most reliable information gives the following: Length between perpendiculars, 99.25 metres (325 feet 7 inches); beam, 13.68 metres (44 feet 10.5 inches); depth amidships, 9.08 metres (29 feet 9 inch); mean draught, 5.8 metres (19 feet 0 inches); displacement, 3952 tons. The protective deck is 1.2 inch thick on the flat and 3.54 inches on the slope. The engines are twin-screw, triple-expansion of 6000 normal I. H. P., and 9500 I. H. P. maximum. There are twenty d'Allest tubulous boilers in three water-tight compartments. The anticipated maximum speed is something over 19 knots. The battery consists of rapid-fire guns as follows: six 16-centimetre (6.3 inch), four 10-centimetre (3.9-inch), twelve 3-pounders; also sixteen revolving cannons of 37-millimetres, and six torpedo-tubes. The plans are by M. Lhomme, ingénieur de la Marine.

The former description of the *Catinat*, given in the NOTES four months since, is also incomplete and inexact, and the following completes and corrects it. The *Catinat* is of steel, sheathed with wood and coppered. She is building under contract by the Forges et Chantiers de la Méditerranée at their yard at Graville near Havre. The plans are by M. Tissier, ingénieur de la Marine. The dimensions are as follows: Length between perpendiculars, 100.2 metres (328 feet 9 inches); beam, 12.6 metres (41 feet 4 inches); depth amidships, 9.3 metres (30 feet 6 inches); mean draught, 6 metres (19 feet 8 inches), and displacement at this draught, 3988 tons. The protective deck is 25 millimetres (1 inch) on the flat, and 40 millimetres (1.57 inches) on the slope. This is laid over plating 8 to 11 millimetres (0.31 to 0.43 inches) thick. The engines are vertical, twin-screw, designed to give 7000 I. H. P. with natural draft, and 9000 I. H. P. with forced draft. The maximum anticipated speed is 19 knots. Belleville tubulous boilers are fitted. The battery is entirely of rapid-fire guns as follows: four 16-centimetre (6.3-inch), ten 10-centimetre (3.9-inch), fourteen 3-pounders, and four 1-pounders. Six 35-centimetre (14-inch) torpedo-tubes are fitted. The 16-centimetre guns are mounted on the upper deck (in sponsons?); four 10-centimetre guns are under the forecastle, and two on the forecastle, and two on

and two under the poop. Some of the 3-pounders are mounted in the lower military tops, and the 1-pounders are mounted in the upper tops. All the guns are mounted *en echelon*. There are six search lights. The military masts are two in number, each carrying two tops. The conning-tower is armored to a thickness of 3.9 inches.

The torpedo-gunboat *Casabianca* is under construction at the Chantiers de la Gironde, Bordeaux, and is a sister ship to the *Cassini*. The dimensions are: Length, 80 metres (262 feet 5 inches); beam, 8.32 metres (27 feet 11 inches); mean draught, 3.13 metres (11 feet 2 inches); and the displacement at this draught is 943 tons. The hull is reinforced with hard steel plates abreast the machinery and boilers. The engines are twin-screw, four-cylinder, triple (?) expansion. The anticipated horse-power is 5000, and the speed 21.5 knots. There are eight d'Allest tubulous boilers arranged in four groups. The battery consists of rapid-fire guns, one of 10-centimetres (3.9 inches), three of 65-centimetres (2.56 inches), five 3-pounders, and four 1-pounder. Three torpedo-tubes are fitted.

A small gunboat, the *Surprise*, designed by M. Normand, the well-known torpedo-boat builder, is being built by him under contract at his works at Havre. The dimensions are as follows: Length between perpendiculars 56 metres (183 feet 9 inches); beam, 7.5 metres (24 feet 7 inches); depth amidships, 4.24 metres (13 feet 11 inches); draught forward, 2.44 metres (8 feet); draught aft, 3.74 metres (12 feet 3 inches); displacement at this draught, 626 tons. The *Surprise* is of steel, sheathed and coppered, and has a single screw. The engine is vertical, 4-cylinder, and is expected to develop 650 I. H. P. with natural draft, and 850 I. H. P. with forced draft. The maximum anticipated speed is 13 knots. The battery consists of two 10-centimetre (3.9 inch), four 65-millimetre (2.56-inch), and four 3-pounder rapid-fire guns. Three masts and moderate sail-power will be fitted.

The submarine boat *Morse*, seven sea-going torpedo-boats, and several boats of the first-class are also under construction.

The building programme for 1894 comprises three battle-ships (*Charlemagne*, *Saint Louis*, and *Henry IV.*), five cruisers of the second-class, one of the third-class (*Lavoisier*), a sea-going torpedo-boat, nine smaller torpedo-boats, and a gunboat of the second-class. All the cruisers of the second-class, except one, will be built by contract. The third-class cruiser *Lavoisier* (ex-H3) was described in the NOTES four months since. Her name at that time was not known, and she is referred to as *H 3*. The remainder of the programme will be built at private yards.

The lightly-armored cruiser *Chanzy* was launched at the yard of the Ateliers et Chantiers de la Gironde, at Bordeaux, on January 24, 1894. The machinery was on board, and the construction work so well advanced that she will soon be able to proceed to Rochefort for her trials. The *Chanzy* is a sister ship in all respects to the *Charner*, *Bruix*, and *Latouche-Tréville*. The dimensions are as follows: Length between perpendiculars, 106 metres (347 feet 9 inches); beam, 14 metres (45 feet 11 inches); depth, 8.27 metres (27 feet 2 inches); mean draught, 5.84 metres (19 feet 2 inches); draught aft, 6.01 metres (19 feet 9 inches); at this draught the displacement is 4745 tons. The anticipated horse-power of the machinery with natural draft is 7400, and with forced draft, 8300. The corresponding anticipated speeds are 17 and 19 knots. (These figures are as reported, but 7400 and 8300 do not bear the proper relation to each other to correspond to speeds of 17 and 19 knots. The horse-power at natural draft seems excessive for 17 knots in a ship of such fine lines.) The protection consists of a broad belt of armor 92-millimetres (3.62-inches) thick extending completely around the ship; a turtle-back steel-deck 50-millimetres (1.97-inches) thick on the slope, and 40-millimetres (1.57-inches) on the flat; and lastly a cellulose coffer-dam rising 1.2 metres (3 feet 11 inches) above the water-line. A shelter-deck as a defense against

bursting shells is fitted above the machinery space. The battery consists of two guns of 19-centimetres (7.48-inches) mounted in turrets on the fore and aft midship-line, one forward and one aft; six 14-centimetre (5.5-inch) rapid-fire guns in turrets supported by sponsons, three each side; four 65-millimetre (2.56-inch) rapid-fire guns; six 3-pounder rapid-fire guns; six 37-millimetre revolving cannon; and five torpedo-tubes, two forward, two on the beam, and one aft. The armor of the turrets of 7.48-inch and 5.5-inch guns is 92-millimetres (3.62 inches) thick. The *Chanzy* will be fitted with two military masts, each carrying three tops for small rapid-firing guns and the search lights. Forward of the foremast is situated the conning-tower with armor 3.62 inches thick.

The third-class protected cruiser *Linois* was launched at the yard of the Forges et Chantiers de la Méditerranée at La Seyne on January 30, 1894. Her dimensions are: Length, 88 metres (321 feet 6 inches); beam, 10.5 metres (34 feet 6 inches); depth, 6.85 metres (22 feet 6 inches); draught aft, 5.3 metres (17 feet 5 inches); displacement, 2270 tons. The maximum indicated horse-power expected is 6600 with forced-draft, giving 20 knots speed. The speed with natural-draft will be about 19 knots. The protective deck is 40-millimetres (1.57-inches) thick on the slope amidships, and the conning-tower 10-centimetres (3.9-inches). The battery consists of two 10-centimetre (3.9-inches) rapid-fire guns mounted on the fore and aft midship line, one forward, one aft; four 14-centimetre (5.5-inch) rapid-fire guns in sponsons, two each side; eight 3-pounder and four 1-pounder rapid-fire guns; four 37-millimetre revolving cannon; and four torpedo-tubes, two forward and one on each beam. Two military masts are fitted carrying tops for 1-pounder rapid-fire guns.

A very sad accident recently occurred on board the sea-going torpedo-boat *Sarrasin*, resulting in the deaths of four persons, one an officer of the Department of Marine, and two of the others, officials of the Cail factory. The accident is believed to have been due to the rupture of a weld in the boiler, permitting steam to escape in large quantities and scald the occupants of the fire-room. The boilers are of the Charles et Babillot type, which consists of two tubes or cylindrical shells, one within the other. The water circulates in the annular space between them. The flame passes around the outer and through the inner tube, which latter is 3.9-inches in inside diameter. The thickness of the annular space is only 2.5 (?) millimetres (one-tenth of an inch). This arrangement gave great heating-surface for a limited weight of boilers and contained water. The boiler had already stood what were regarded as ample tests, and was simply undergoing trials before a commission preliminary to final acceptance. The result of the accident is that the Department of Marine has declined to further consider the use of the Babillot boiler; and the *Tourbillon*, a sister to the *Sarrasin*, and first-class boats 165 to 161, being fitted with these boilers, will have them removed. The *Sarrasin* should have been completed long ago, but her boilers had already given trouble; nevertheless, it was supposed, prior to the accident, that all difficulties and objectionable features were removed.

The *Amiral Duperré* is being generally overhauled and refitted. Among other changes her present auxiliary battery of 14-centimetre (5.5-inch) guns of the ordinary breech-loading type will be replaced by 10-centimetre rapid-fire guns.

The *Tonnant* has had a successful trial of the electric machinery for moving her 34-centimetre guns. Several vessels of the French navy are designed to be so fitted, but she is the first to have the apparatus installed.

Russia.

SHIP-BUILDING PROGRAMME, 1894.—The following is from the *Army and Navy Gazette*: "The ship-building votes, as we are informed by our correspondents in Russia, will provide for carrying forward, at St. Peterburg, in the New Admiralty, Baltic, and other yards, the

battle-ships *Sissoi Veliki* (8880 tons), *Poltava*, *Sevastopol*, and *Petropavlovsk* (each of 10,960 tons), the so-called "coast-defense" ships or belted cruisers *Admiral Oushakoff* (or Uschakoff, described in the NOTES four months since) and *Admiral Seniavine*, and the armored cruiser *Russia* (12,180 tons), one of two ships of the *Rurik* type, just commenced at the Baltic works. At the Nevsky Yard ten torpedo-boats are to be built, but the contract is not yet signed. In the autumn, at the New Admiralty Yard, there will be laid down a new battle-ship of the *Sissoi Veliki* type, and a third cruiser of the *Rurik* type enlarged. Ship-building activity, moreover, will not be confined to the Baltic, for a sister of the *Sissoi Veliki* (the *Paris*) will be commenced at Nicolaieff in the spring. There, also, two torpedo-boats are to be laid down at once, and two others at the Ishora Yard. Tenders have been received from England for building a cruiser for the Pacific, a yacht for the Grand Duke, and a steamer for visiting light-houses. We have information that of the Black Sea battle-ships the *Catherine II.* is the only one that has turned out a success, the *Sinope* and *Tchesme* being failures in many ways, especially in the matter of speed. A new ship of the *Three Saints* (the Trinity or Tri Sviatitelia) class has been begun, the *St. George the Victorious* (Gheorghy Pobyedonosets) is still in the dock-yard hands, the *Three Saints* has just received her engines, and the *Twelve Apostles* (Dvenadsat Apostoloff) is the most forward of the new ships in the Black Sea. According to the *Novoye Vremya*, 30 torpedo-boats in all are to be built at Tschorsk and Cronstadt, but it is certain that provision has only been made for a part of these. It was certainly a foregone conclusion that Russia would continue her ship-building, and, as we have often insisted, to base our own programme of future operations upon foreign ships actually in hand, is wrong both in principle and policy. We now see, according to the best information available, that in addition to her huge armored cruiser, the third *Rurik*, which has long been contemplated, Russia proposes to lay down in the current year three new battle-ships, besides smaller vessels and torpedo-boats. We shall be surprised if France does not respond with a promise of like activity."

"The following are the particulars of the new battle-ship *Paris*, which has been lately laid down at Nicolaieff, and which will commemorate Admiral Avellan's visit to the French capital: Length, 344 feet 6 inches; beam, 68 feet 10 inches; displacement, 8880 tons; twin screws, driven by vertical, triple-expansion engines of 8000 I. H. P., fed by 16 cylindrical boilers, placed in groups of four in as many separate compartments; two funnels; one military mast with two armored tops; one signal mast; bunker capacity for 800 tons of coal, or sufficient for 2000 miles (this is certainly not overestimated) at 10 knots; extreme speed, 16.5 knots; an armored belt 15.7 inches thick for four-fifths of the ship's length, and of 11.8 inches thick along the rest of the water-line, surmounted by a broad end-to-end belt of 5-inch armor for the protection of the secondary armament; a 3-inch end-to-end protective deck of steel; two turrets, the forward one of 11.8-inch armor, containing a pair of 11.8-inch guns, and the after one of 10.2-inch armor, containing a couple of similar weapons; transverse bulk-heads of 11.8-inch armor; and, as secondary armament, six 59-inch r.f.g. and twenty 1.8-inch (3-pounder) and 1.4-inch (1-pounder) r.f.g. There will be two torpedo-ejectors on each broadside, one in the bows, and a sixth aft. This ship will, therefore, be extraordinarily powerful for her size. She will, however, be considerably less formidable than another new battle-ship, of 12,480 tons, which is about to be laid down in the Black Sea, and which will be a repetition of the *Tri Sviatitelia*, which was launched last year."—*London Times.*

The Baltic fleet will shortly be reinforced by more than thirty torpedo-boats, all of which will be built in Russia. To cope with these new demands, says the St. Petersburg correspondent of the *Standard*, the Yedjorsky (or Tchorsk) and Cronstadt works are

having their shops enlarged and their staff increased. The former of these establishments has already on hand the *Nargen* and the *Hogland*, and eight more of the same class have been ordered. Private yards have also received orders for torpedo-boats of two different types,—the Creyton works at Abo for two of the *Pemoff* (Pernow?) type, and the Putiloff Company of St. Petersburg for two similar to the *Tossna*, launched from their stocks last summer. *Pourparlers* are also going on with the Nevsky and Franco-Russian Societies for the building by them of ten boats, each of a new pattern altogether, 150 tons, and speed of 26 to 27 knots.—*New York Herald, Paris edition.*

On February 7, Messrs. Hawthorn, Leslie & Co. launched at their yard, at Hebburn-on-Tyne, the third vessel of the class built by the firm for the Russian Volunteer Fleet, the former two being the *Orel* and *Saratoff*. This ship, the *Petersburg*, is a three-masted, twin-screw vessel, 460 feet in length over all, 54 feet beam, and 35 feet in depth. Her capacity exceeds 6000 tons measurement. Her speed will be 19 knots, and bunker capacity 1200 tons. There are berths between decks for 1500 emigrants or troops. These vessels trade between the ports of European Russia and Vladivostok in times of peace, but in case of war they would be utilized as transports or auxiliary cruisers. The larger ones are fitted to mount ten or twelve guns. The volunteer fleet has been in existence since 1877–78, and the older vessels are gradually being replaced by new ones built on the Tyne or at La Seyne. There was a Petersburg among the first vessels purchased with the Patriotic Fund from the Hamburg-American Steamship Company; this vessel originally bore the name of *Thuringia*, and the one launched in February is presumably intended to replace her.

An attempt is to be made to find and salve the foundered Russian coast-defense ironclad *Russalka*. Several men-of-war and two hired Finnish vessels, *Akkola* and *Eckelen*, are ordered to undertake the duty. The Russian government has also permitted a Swedish salvage company to take part in the attempt. The *Smertch*, a ship very similar to the *Russalka*, has this year been attached to the Russian training squadron, which includes as well the old ironclads *Kreml* and *Pervenets*, flag-ship of Rear-Admiral Livron. The employment of the *Smertch* for this work meets with hostile criticism in naval circles, as she is alleged to be as unsafe as the *Russalka*.

A new and powerful cruiser is being built by Russia at St. Petersburg. She is to have two main engines, aggregating 15,000 horse-power at forced draft and 10,000 horse-power at natural draft, and capable of giving a speed of 19½ to 20 knots, the displacement being 12,230 tons. The vessel is to be called the *Russia*, and will be sheathed with copper.

Italy.

During some experiments recently carried out at Spezia with the Pullino submarine boat, with Vice-Admirals Racchia and Librano on board, the boat traversed the entire length of the gulf, returning to the surface in close proximity to the training-ship *Maria Adelaide*, at which it feigned to discharge a torpedo. The trial was a complete success.

Sweden.

BUILDING PROGRAMME.—The Minister of Marine has proposed a plan for the increase of the navy. It involves a total expenditure of 10,622,000 kr. ($2,900,000), which is to be spread over five years, as follows: In 1895, half the cost of an armor-clad and the commencement of a dispatch-boat; in 1896, the completion of the armor-clad, the building of a first-class mine-boat, the completion of the dispatch-boat, and the commencement of a transport-steamer; in 1897, half the cost of an armor-clad, three first-class mine-boats, one second-class mine-boat, and the completion of the transport-steamer; in 1898, the completion of the armor-clad, the building of three first-class mine-boats, and two second-class mine-boats; in 1899, half

the cost of an ironclad, three first-class mine-boats, and three second-class mine-boats.

Argentine.

The steel torpedo-cruiser *Patria* was launched at the works of Laird Brothers, Birkenhead, December 28, 1893. She is the fifteenth vessel built by this firm for the Argentine government. The *Patria* is described as a vessel of the *Halcyon* type, but larger. The dimensions given are: Length, 250 feet; beam, 30 feet; depth, 16 feet; and the *tonnage* (not displacement) 1183 tons O. M. (old measurement). Five different magazines and newspapers agree as to the above details. But the agreement, instead of proving correctness, merely points towards a single source (probably the London *Times*) for all; the more likely is this agreement inconclusive, as the dimensions given are almost identically the same as for the *Halcyon* class,—if anything somewhat less,—and as the displacement of the *Halcyon* is only 1070, that of the *Patria* is not likely to be much more, and certainly not enough to give 1183 tons O. M. But of course this is only conjecture based upon probable similarity of hulls. The *Patria* differs mainly from vessels of like class in the British navy in having a flush spar-deck instead of a poop and forecastle, or long, raised forecastle with poop cut away. This difference in hull would, of course, add considerably to the tonnage measurement and something to the displacement. The engines are triple-expansion, of 1250 horse-power each, driving three-bladed propellers with steel bosses and manganese bronze blades. The boilers are of steel, four in number, locomotive type, working-pressure 155 pounds. Forced draft on the closed fire-room system is fitted. The battery is entirely of rapid-fire and machine guns. There are five torpedo-tubes.

L. S. Van Duzer,
Lieutenant U.S.N.
Philip Andrews,
Ensign U.S.N.

SERVICE SALAD.

Commanders in Battle.

(*From the St. Louis Globe-Democrat.*)

OBSERVATIONS OF FOOTE, GRANT, AND LOGAN WHILE UNDER FIRE.

As I remember Commodore—afterwards admiral—Foote in the early days of the Mississippi flotilla, he was a man of nearly sixty, below the medium stature, with gray hair and whiskers and a pair of piercing but kindly blue eyes. He was always, on or off duty, arrayed in the fine naval uniform of his rank, and was quite an interesting figure on the badly-paved streets of Cairo, where I first met him. He was a man of intensely religious nature and character, and quite a fanatic on the subject of temperance. One Sunday night in Cairo he dropped into a church, and finding the pulpit still vacant, ascended it in uniform and was in the midst of a strong practical sermon when the pastor arrived, and was only too glad to let him proceed. I had been sent to Cairo by the Cincinnati *Gazette* to act as correspondent from that quarter. The gunboats had just returned from the bloodless victory of Fort Henry, and were fitting out for what afterwards proved to be, for them, the very disastrous defeat of Fort Donelson. The commodore happened to be suffering just then from a rheumatic hand, and his infirmity became my opportunity; for through a friend I offered my services as a volunteer private secretary, which were promptly accepted, and thus I obtained a berth on the flagship of the squadron, the "St. Louis."

The fleet consisted of four ironclads,—the "St. Louis," the "Louisville," the "Pittsburgh," and the "Carondelet," and two wooden vessels, the "Tyler" and "Connestoga." The latter, though well handled, were not of much service in the engagement. In the action each of the ironclads worked her two bow guns to their full capacity. I have forgotten their calibre, but they were the largest of the time, and the eight in concert made a fearful racket. The gunboats were of a very slow motion. They were propelled by large paddle-wheel located amidships, which seemed to have all it could do sometimes to stem the current of the Mississippi, and afterwards of the Cumberland, in a bend upon the right bank of which, as we ascended, Fort Donelson was located. The ironclads were built of very heavy oak, plated with wrought iron an inch and a half to two inches thick, and supposed to be proof against the heaviest artillery. The condition of the ships and their crews after the battle showed that the latter supposition was incorrect. The pilot-house was on the upper deck, well forward. It was conical in shape, and would hold four men standing up and two or three more reclining on cots in the angles formed by contact with the deck. It was entered by a ladder from below, reaching from the gun-deck. It was built of oak and iron, and was intended to have more resisting power than any other part of the ship; but those who occupied it during the engagement discovered that this was a mistake.

I called at the commodore's cabin late on the night of the 18th to ask if my services as an amanuensis were needed. "No," the commodore said, with much cheerfulness; "everything is ready now. Before I go to bed I will pray for victory, which I think we shall win, or for the next best thing to victory, which is grace to bear defeat."

Everything was in readiness on the

morning of February 14, and the commodore signaled the ships to move in the order previously agreed upon, and to prepare for action. The "St. Louis," being the flagship, led the procession. She carried the commodore's pennant, and this, together with the fact that she was in front, of course made her the principal target for the batteries of the fort. I accompanied the commodore from his cabin to the pilot-house, where we both remained until after the battle was over. As we passed along the gun-deck the commodore, pointing to one of the few among the crew that had seen sea service, said to me, "That old man was with me in the China seas: he is a typical 'salt,' and is full of sailor superstitions. I know he don't like this thing of going into action on Friday." Sure enough; I saw the old man in the hospital that night, nursing a wounded leg, and he insisted that it was all because it was Friday. When we reached the pilot-house the commodore said it was one of his "sick-headache days," and immediately threw himself on a cot which filled one of the angles of the small apartment, directing me at the same time to stand at one of the little iron windows and report to him how we were progressing.

I had a good field-glass, which I brought to a focus on the fort. Very soon there was a puff of white smoke from one of the batteries, and I cried out, "Here she comes." She did come, too, in the shape of a cannon-ball, which hissed and whizzed past us in an instant. The pilots began to swear, as the first shot was swiftly followed by the second, the third, and the fourth. Then there was a slight pause, as if for better aim, for with a renewal of firing the balls began to strike the ship and to pound against the pilot-house. The pilots swore louder than ever. I thought a thousand damns, but uttered none. The commodore raised himself from his cot in remonstrance. "Tut, tut, tut, men, don't swear; it does no good," said he. Subsequently he rebuked us all for "ducking" in foolish efforts to get out of the way of approaching cannon-balls. "You can't escape by ducking: you are more apt to get hit while you are doing that," said he, adding that he had seen men cut in two in the China war by ducking, who would not have been hurt standing up. He then asked me whether the firing from our ships was damaging the fort. I told him it was doing very well; that the men in the fort were hustling around pretty lively, and that our shots were throwing up the mud around the fort in big lots, but I could not tell whether any of the Confederate guns had been dismounted.

All this time the "St. Louis" had been moving towards the fort at full speed. "We are getting awfully close, commodore; through this glass I can almost put my hand on the fellows at the guns in the fort." "That's right," said the commodore in a voice without the slightest emotion. "Put on a little more steam, Mr. Pilot, and get as close as you can." As between the fort and the fleet it was now a mighty hot fight. Shots were striking the vessel and the pilot-house at the rate of several a minute. When they struck us squarely on the armored bow, between the two great gun-ports, the vessel reeled and trembled from stem to stern; it was like a man struck on the forehead with a heavy fist. From within the pilot-house we could hear the great iron balls embedding themselves in the armor with a thump and a thud, as though knocking for admission and determined soon to gain it. The commodore still lying on his cot, unable to see what was going on ahead, as the two little windows were occupied one by the pilot on duty and the other by myself as the commodore's lookout, kept asking for more steam, and was only half satisfied when told from below that the ship could not carry another pound of steam without danger of an explosion. "Get right under the fort; that's the way to fight," said the commodore, with his hand on his forehead, still nursing his headache, but now standing up instead of, as heretofore, reclining on his cot.

We were now within two hundred yards of the fort, and the air was full of the iron hail of all the guns on both sides. One could almost see the big projectiles as they crossed each other's path going in opposite directions. The men in the fort were being rapidly driven

from their guns, but they had good refuge behind bomb-proof embankments, and they rallied easily and speedily. What had been long feared and expected came at last. A shell from the best and largest rifled gun in the fort—a gun that had been trained on our pilot-house since the opening of the battle—struck our armored plating at right angles and came crashing through the iron and the oak as through a piece of pasteboard. It must have exploded either in coming through or immediately on entering the pilot-house; at any rate, we picked up a full bushel of iron fragments from the floor of the pilot-house that night. The pilot, who was at the wheel at the time, a brave fellow named Reilly, of Cincinnati, was struck on the thigh and bled to death in an hour; the commodore was badly and painfully wounded on the leg, and went on crutches during the remainder of his life; three others were hurt in various ways; I was the only one of six who entirely escaped. The steering wheel was battered into match timber, and all the apparatus for controlling the vessel was utterly destroyed.

Everything was in chaos inside of our shattered citadel, but the commodore, sorely wounded though he was, had sufficient presence of mind to order the steam shut off, as the vessel was still moving towards the fort without pilot or rudder, and the fort was playing upon her with terrible effect. What saved us all from death or capture was the fact that we were fighting up stream, and when disabled we soon drifted out of range. Had we been fighting down stream we should have drifted into the fort under an awful fire and to inevitable destruction. The other vessels of the fleet were all badly damaged, but none so badly as the "St. Louis." The Commodore lost neither courage nor temper on account of his wound. I summoned the surgeon to his aid, but he would receive no assistance until the others had been served. We carried him down the ladder and along the gun-deck to his cabin, but he was cool, watchful, courageous, and observant, and did not retire until he knew that his injured vessel was safely moored to the shore beyond the reach of the Confederate guns. "God's will be done, but it's only a temporary set-back," said he, as we laid him on his cabin lounge.

The fight received little attention at the time, because it was overshadowed by General Grant's victory, and Buckner's surrender, two days later. But if I had a chance to choose for a future experience between two hours on the hottest battle-field of the war and ten minutes in that pilot-house, I would pick the battle-field for comfort.

General Sickles at Gettysburg.

On the glorious field of fight,
With our guns upon the right
Hurling angry shot and shell,
As we heard the rebel yell,
At the head of his command
With his brave sword in his hand,
'Mid the flaming fires of hell
There our gallant general fell
At Gettysburg.

Red the sun was in the west,
And the troops that held the crest,
Standing firm in martial ranks
With the batteries on their flanks
And the bayonets' broad line
Ready for the ruby wine,
Were drawn up o'er hill and dell
When our corps commander fell
At Gettysburg.

There was clash of flashing steel
And the cavalry's wild wheel,
While the rifles' lightnings broke
Through the clouds of lurid smoke,
And the raging battle roared
Where the flag of glory soared
'Mid a hail of shot and shell
When our patriot leader fell
At Gettysburg.

There was charging at the foe,
There was wavering to and fro,
There were blows and bated breath,
There were wounds and pain and death,
And 'mid all the rush and sound
Gore was streaming on the ground,
In the tumult and pell-mell
When our fearless comrade fell
At Gettysburg.

We all saw him face the fight
With his features stern and bright,
And we heard him 'mid the noise
Calling, "Steady! Stand fast, boys!"
As he waved his sword on high
Bold as eagle in the sky,
When the soldiers raised a yell
For our valiant marshal fell
At Gettysburg.

But, thank God, it was not willed
That our general should be killed
On that field of strife and blood,
Where the hero nobly stood,
Though he paid the fearful cost
Of a shattered leg he lost,
And he lives to ring the knell
Of the foemen where he fell
At Gettysburg.

As the sickles reap the grain
Waving o'er the golden plain,
So our captain led us on
Where the harvest-field was won,
And our reapers gleaned the sheaves
Lying thick as autumn leaves,
Till the nation—joy to tell—
Thus was saved, and all was well
At Gettysburg.

DAVID GRAHAM ADEE.

"All Hands bury the Dead."

HE who has not heard the deep voice of the boatswain as he slowly passes this word, the shrill mellow pipe of his whistle, the echoing reply of his mates from various parts of the ship, the splash of the waves, the lazy flap of the sails, the distant thunder booming over old ocean, knows not what grand solemnity sometimes visits the affairs of men.

Men of the sea are not given to, nor are they accredited with, sentimental musings, but within their hearts will be found deep wells of sentiment, wells of love and affection, and wells of hope and ambition. Reckless and ribald they appear to us, but this is caused by the constant menace to life their occupation brings.

A sailor's heart is as tender as that of a woman, and when a death occurs on board ship, the meek and humble piety of the crew is sincere and evident, and would do credit to a more religious party.

The great desolate stretch of water with its mountainous billows and howling winds, or, with smooth sea and limitless calm, seems to invest the presence of the grim reaper with a most merciless character and brings to the minds of the living a more definite sense of the terrors of death, and its abiding solemnity, than is felt on land.

All night long on the quarter-deck lay the body of poor Jack, covered with the flag he had fought for, and had died under, a marine with bowed head alone standing guard.

No matter how rough and hardened the sailor, he takes off his cap and bares his head to the pitiless sky whenever he passes the corpse, and the thoughts of his heart are a more acceptable prayer to Him who commands the mighty deep than many a mumbled word.

A feeling of overpowering oppression has extended throughout the ship, even the blocks and tackles have dulled their squeak to a mournful tone.

Morning breaks with a dull lead color in the east; the air is murky and heavy; preparations are being made, fore and aft, for the climax to the tragedy. At nine o'clock all hands are called, and with heavy hearts the crew assemble; the officers are up and aft.

Poor Jack's body is resting on a board, one end of which is on the sill of a gun-port, which has been opened for the occasion.

Everything is in readiness; the officer-of-the-deck quietly gives the order, and the main topsail is braced aback. The harsh, heartless clang of the gong brings the engine to a stand-still. The captain appears and standing at the head of the corpse slowly reads the burial service.

All hands uncover, and as the solemn words float on the air, "We commit this body to the deep," the inner end of the board is raised and the cold insensate mass of mortal clay, the body of poor Jack, glides into the limitless, bottomless ocean, to await "reveille" and the call of "All hands" in the world beyond.

Three volleys are fired by the marines,

MARIAN LOUISE BOWKER, 2 years 6 months, and HAROLD L. BOWKER, 4 years and 7 months.

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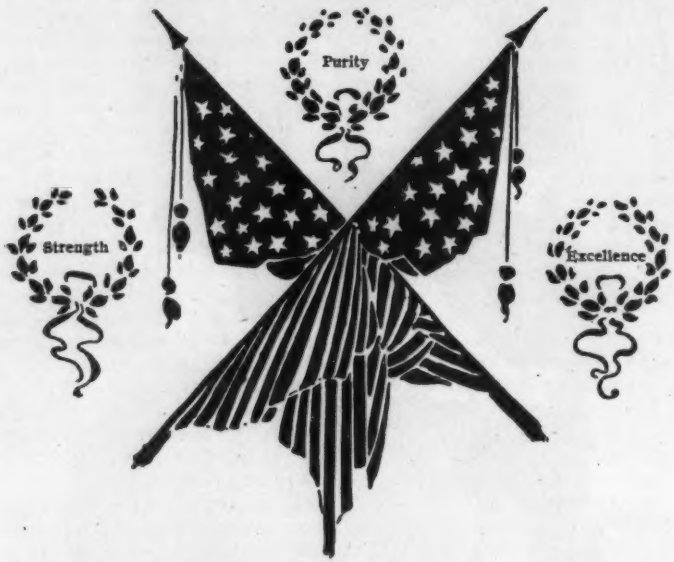

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"Foremost Baking Powder in all the World."

"tattoo" is sounded, and the ship fills away on her course.

Routine work is again begun, but Jack is not forgotten.

Many are the tears dropped in memory of him, many are the thoughts given to his mother, his sister, his sweetheart, who, all ignorant of the truth, are waiting to welcome him home.

On no earthly shore will they clasp him to their loving hearts, but on the shore of the great beyond, faithful, loyal Jack with his ever true heart is watching and waiting for them.

F. R. BRAINARD.

The Mysterious Lake Tides.

(*From the New York Sun.*)

RISING SUDDENLY FROM CALM WATER, AND FULL OF STRANGE CAPRICES.

"TIDAL waves on the great lakes are not of uncommon occurrence," said an old Lake Erie skipper, "and although meteorological experts have for more than a hundred years tried to study out their cause, we don't know any more about it now than they did at the time the great wave rose suddenly on Lake Erie, off Rockport, and destroyed Colonel Bradstreet's fleet in October, 1764. That was the first tidal wave on the lakes that we have any record of.

"I have seen many of these swashes, as we call them on the lakes, the last one about ten years ago, when my schooner was swept high and dry at Port Stanley by a wave that seemed to rise on the lake like some monster marine animal coming from the depths to the surface. We could see it rushing towards us a mile away. It came with a boiling front ten feet high, hissing like loud escaping steam as it swept towards us. That is a peculiar thing about the lake tidal waves. They do not come with a roar, like the ocean surf, but with a loud, hissing sound; and there is only one instance on record where they are either accompanied or followed by strong winds.

"That one instance was at Toledo, in December, 1856, when the wind, which had been blowing stiff off shore, suddenly whirled into a howling nor'easter, and as quick as the change in the wind that wave leaped out of the lake and came hurling upon the shore a wild and angry mass, eight feet high. In every other recorded occurrence of these mysterious freaks of the lake waters the surface of the lake has been perfectly calm and the air scarcely perceptible.

"Such was the condition when that big wave attacked us at Port Stanley, swamping my schooner and drowning one of my men. The wave receded as fast as it had rushed in, and the lake, in less than ten minutes, was as smooth as a mirror.

"Within the next hour there were four more swashes, each one of less force and volume until the last was scarcely more than a ripple.

"Almost the first thing I remember, for I was but three years old at the time, was one of these tidal waves. It appeared early in the spring on the Canada shore off Otter Creek. There was a piece of woods there then with a long stretch of beach between it and the lake. My father had a thirty-five-ton schooner lying off the shore half a mile or more. The water was a dead calm, when without warning of any kind a wave lifted itself from the bosom of the lake, probably a mile and a half out, and swept shoreward with its mighty hiss. My mother and I were with father on his schooner. As that swash came rushing upon us it seemed to me as if the leaping foam of its white crest was higher than the schooner's masts, but I know now that they were not more than twelve feet high. The wave was high enough and strong enough, though, to sweep the schooner ashore as if it had been a cockle shell, and across that stretch of beach into the woods, where it was left among the trees, a hopeless wreck.

"In ten minutes the lake was as calm as ever, but an hour later, a similar wave appeared at Kettle Creek, twenty miles from Otter Creek, and tumbled all sorts of lake craft ashore.

"I guess the greatest tidal wave ever seen on any of the lakes was the one Dr. Foster and his party of voyagers saw on Lake Superior, between Copper Harbor and Eagle River. That was in

August, 1845. This swash was more than twenty feet high, and, like all of its kind, sprang suddenly from the lake at dead calm. It was a quarter of a mile distant from Dr. Foster's boat, which, when the disturbance began, was directly in the path of the wave. It was crested with foam, and curled over like a mighty ocean surge. Before reaching the boat, however, the wave turned so that its nearest extremity swept past it at a distance of fifty feet, the water between that extremity and the boat being scarcely ruffled by the influence of the rushing tide.

"The wave was only half a mile from shore, but, notwithstanding its great size and velocity, it never reached there. The same mysterious caprice that caused it to change its course and pass harmlessly by the vessel seemed to seize it once more, and it sank rapidly from its great height as it approached the shore and struck the beach with no more force or rise of water than might have come from the wash of a passing vessel.

"I remember a notable swash on Lake Michigan, at the mouth of the Menominee. That one appeared in April, 1858, and rushed into the river with such tremendous force and volume that it upset the ferryboat on the Menominee. The recurrent oscillations of these swashes are usually of decreasing size and force, but this one on the Menominee wasn't that kind. The ebb of this tide was just as sudden as its flow, but in a few minutes it was followed by another wave much larger than the first one, and the ebb of the second swash was followed by a wave still larger than the second.

"That seemed to satisfy the mood of the lake at Menominee that day, and with the receding of the third wave, calmness even unwonted prevailed on its bosom. The time between the coming of the first wave and the receding of the third was less than twenty minutes.

"The curious thing about these lake tidal waves is that they are entirely local in their influence. A swash, even of the greatest force and height, may not affect more than a mile of lake front, the water at either end of them being undisturbed beyond that distance. They always come in from the open water."

THE GREEN BAY TREE. By W. H. Wilkins and Herbert Vivian, J. Selwyn Tait. New York. We have here a novel with a purpose, that of showing the triumph of vice allied with cleverness, the downfall of virtue allied with folly. The work is decidedly clever, but not altogether agreeable, the society it leads us into being one which, if we thought it represented the whole of society, would make us earnestly desire to seek some better world. There are good people in the book,—two of them,—but one is a pigeon to be plucked and the other an enthusiast to be duped, and both pay the penalty of virtue divorced from common sense, while the Green Bay Tree of vice waves its leaves triumphantly over all.

"Remember always that your best friend is yourself." Such is the rule of life by which Walpole Coryton steers his course through the muddy seas of modern society, and by whose aid he at length reaches the port of prosperity, while his virtuous dupes sink into the slough of misery and want. There is a flavor of truthfulness in all this, though it is drawn in too high a key. Even English society is not all corruption and selfishness. There is another side to the medal, but the authors have set out to show the blurred side only. Their purpose is well achieved, and the novel is one of much merit and interest. It claims a double authorship, and the authors have taken the trouble to point out the chapters of the work which belong to each, yet even with this guide it is difficult to distinguish between them. They are both witty, keen-sighted, and experienced, and have dovetailed their styles together with a skill that makes it seem the work of a single hand."